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LEE'S LANE LANDFILL REMOVAL ACTION

Louisville, Jefferson County, Kentucky

VOLUME 2

U.S. Environmental Protection Agency
Region IV
Atlanta, Georgia

EPA

SECTION V

Record of Decision

ENFORCEMENT DECISION DOCUMENT
REMEDIAL ALTERNATIVE SELECTION

SITE

Lees Lane Landfill
Louisville, Kentucky

DOCUMENTS REVIEWED

I am basing my decision primarily on the following documents and recommendations describing the analysis of the cost and effectiveness of the remedial alternatives for the Lees Lane Landfill site.

- Remedial Action Master Plan for the Lees Lane Landfill, May 1983
- Remedial Investigation for the Lees Lane Landfill, April 1986
- Feasibility Study for the Lees Lane Landfill, April 1986
- Responsiveness Summary
- Recommendations from the State of Kentucky
- Staff recommendations

DESCRIPTION OF SELECTED REMEDY

The selected remedy includes:

- Provision for a properly operating gas collection system
- Consideration of a possible future alternate water supply
- Cleanup of surface waste area ≈25 drums
- Bank protection controls riprap
- Establishment of an ACL for the groundwater at the site
- Institutional controls, which will be fully identified during remedial design, will be implemented. These controls may include, but will not be limited to:

  - cautionary signs,
  - installation of a gate at the Putnam Street access point.

- Operation and Maintenance (O&M) activities which will include:

  - groundwater, gas, and air monitoring,
  - inspection of the gas monitoring wells, gas collection system, capped waste areas, and the riprap along the Ohio River bank.

DECLARATIONS

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 CFR Part 300), I have determined that the remedy described above for the Lees Lane Landfill site is a cost-effective remedy that provides adequate protection of public health, welfare and the environment. The State of

Kentucky has been consulted and agrees with the remedy. The PRPs and EPA have agreed in principle that the PRPs will perform the selected remedy. The terms of an Administrative Consent Order, possibly including reimbursement for past costs, is in the process of completion.

I have also determined that the action being taken is a cost-effective alternative when compared to the other remedial options reviewed.

SEP 25 1986

Date

Jack E. Ravan
Regional Administrator

Enforcement Decision Document
Remedial Alternative Selection
Lees Lane Landfill Site
Louisville, Kentucky

SITE LOCATION AND DESCRIPTION

The Lees Lane Landfill site is located adjacent to the Ohio River in Jefferson County, approximately 4.5 miles southwest of Louisville, Kentucky. The site, consisting of 112 acres, is approximately 5,000 feet in length and 1,500 feet in width (see Figure 1). The site consists of three tracts of land designated as the northern, central, and southern tracts. Most of the landfill site is level to gently sloping, with one depression having steep slopes located on the southern end of the site. The landfill surface is primarily covered with well established vegetation ranging from brush to woodlands. During the Remedial Investigation (RI) Scattered drums, construction debris, tires, and household wastes were observed on the landfill surface. The site lies within the 100-year floodplain of the Ohio River. Therefore, if a major flood occurred it could cover 25 to 50 percent of the landfill causing two potential effects to the site: disturbance of the surface cover by the floodwaters and gradual erosion of the western bank of the landfill.

The site is bordered on the east and south by a flood protection levee. To the northeast is Borden, Inc., a chemical manufacturer, and to the south is the Louisville Gas and Electric Cane Run Plant (a coal-burning electric generating station). Other industrial development occupies some of the Kentucky side of the Ohio River from Louisville south to the Lees Lane Landfill area. Across the levee to the east of the site is Riverside Gardens, a residential development of about 330 homes and 1,100 people. The west side of the site has a narrow, terraced area which serves as a buffer zone between the landfill and the Ohio River. A gas collection system has been installed along the property boundary southeast of the site between the landfill and Riverside Gardens (see Figure 2).

The geology of the site area consists of approximately 110 feet of Ohio River alluvium and glacial outwash underlain by the New Albany shale, reported to be 100 feet thick. The alluvial aquifer is unconfined with the shale forming an aquitard between the alluvial aquifer and the deeper limestone aquifers. Both the alluvial and limestone aquifers are current and potential sources of drinking water. The water table begins approximately 50 feet below land surface and the saturated thickness of the alluvial aquifer is approximately 60 feet. The groundwater flow direction at the site is predominantly toward the Ohio River with a potential for groundwater flow under the river. During periods of high flow in the Ohio River, contaminant migration may reverse. However, in order for groundwater flow reversal to reach Riverside Gardens, the conditions necessary for flow reversal would have to be present for a long period of time.

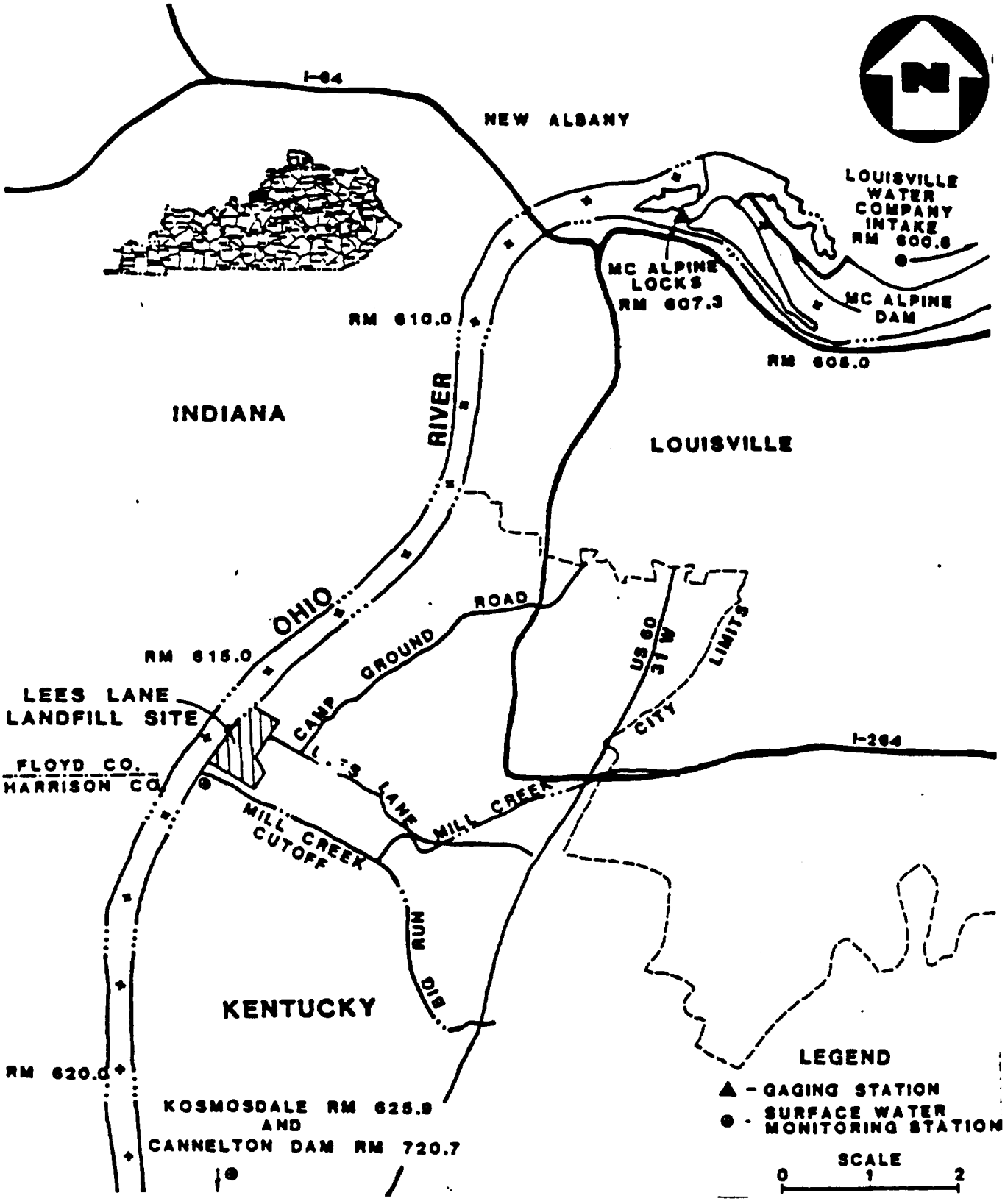


FIGURE 1
REGIONAL MAP
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

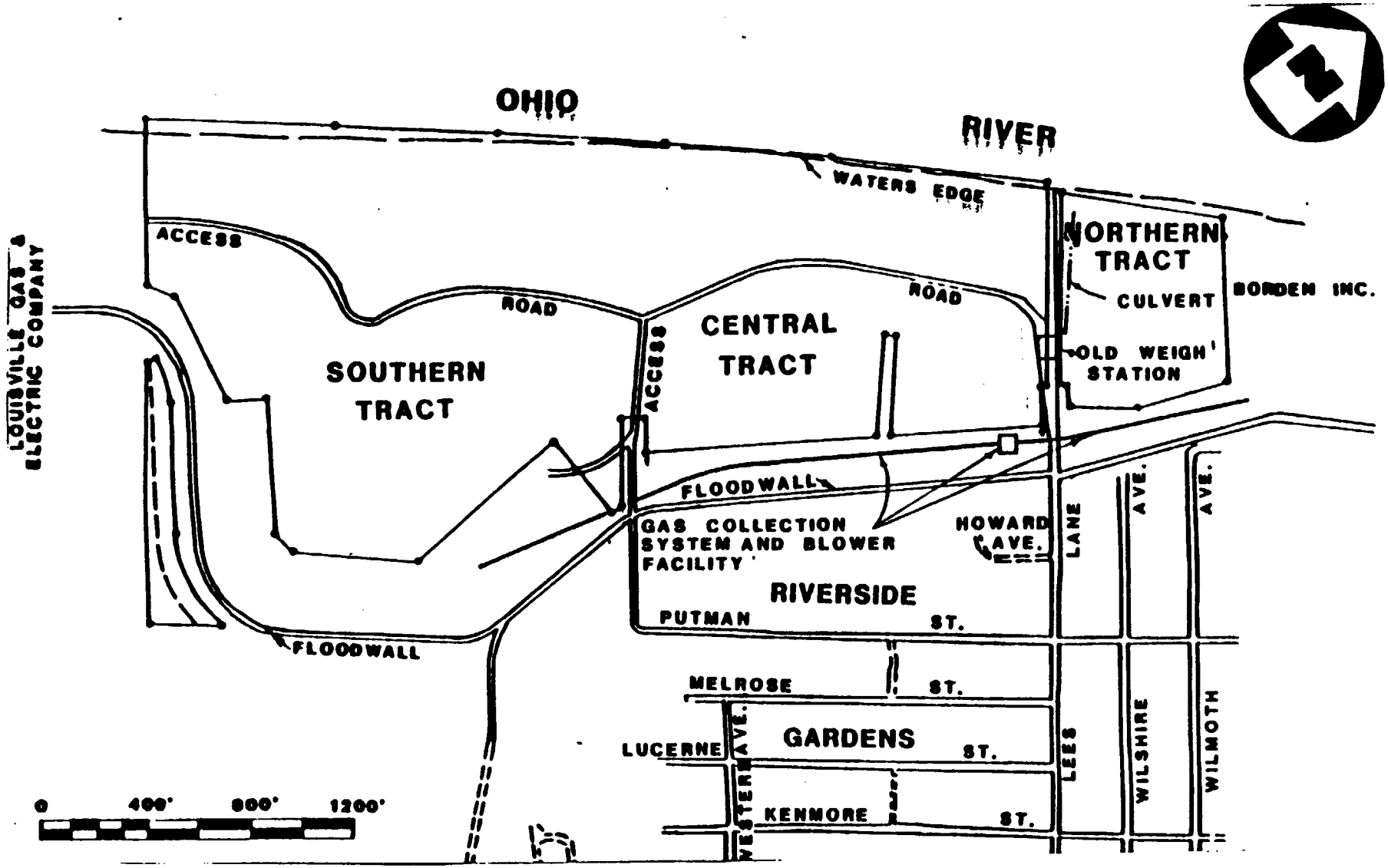


FIGURE 2

SITE LAYOUT, LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

SITE HISTORY

Land use at the Lees Lane Landfill site has included a sand and gravel quarry, a junkyard and a landfill. The period of sand and gravel operations at the site is not known but quarry operation began at least as early as the 1940s. The landfilling operations at the site were reported to have begun in the late 1940s.

The site received domestic, commercial, solid municipal, and industrial wastes over a 27-year period. Available historical records and responses to waste surveys identify that at least 212,400 tons of mixed industrial waste (some drummed) were disposed of at the Lees Lane Landfill by industrial firms from in and around the Louisville area.

Fill areas are located in the central and southern tracts and excavation areas in the northern and southern tracts. Background information for the site indicates that the northern tract excavation area was eventually filled with wastes but that the site was closed before the excavation area in the southern tract was completely filled. A large depression with ponded water now exists where remaining landfill capacity existed at the time of closure.

The southern tract of the site operated under a permit issued in 1971 by Kentucky under its Solid Waste Program. The permit expired in November 1974 and was not renewed by the State. In April 1975, the landfill was closed.

In March 1975, homeowners in Riverside Gardens, a community adjacent to the site, reported flash fires around their water heaters. A subsequent investigation detected explosive levels of methane gas and seven families were evacuated from homes near the site. These homes were ultimately purchased by the Jefferson County Housing Authority. In 1978, extensive monitoring was conducted to define the gas migration problem. A venting system was installed in October 1980.

In February 1980, the Kentucky Department of Hazardous Materials and Waste Management (HMWM) discovered approximately 400 drums on a terrace about 100 feet from the Ohio River bank. Over 50 chemicals were identified, including phenolic resins, benzene, and relatively high concentrations of copper, cadmium, nickel, lead, and chromium. In September and October of 1981, the drums were removed by the Lees Lane Landfill owners under court order. The hazardous wastes were removed from the drums and transported to an approved hazardous waste disposal facility. The remaining nonhazardous drummed materials and the empty drums were buried onsite.

In early 1981, Kentucky Natural Resources and Environmental Protection Cabinet (NREPC) installed shallow groundwater monitor wells at the site. The results showed high concentrations of heavy metals and aluminium. However, the analytical report stated that many of the sample concentrations were probably elevated due to excessive sediment in the samples caused by poor well construction.

The Lees Lane Landfill site was ranked on the National Priorities List (NPL) in December 1982. In May 1983, a Remedial Action Master Plan was completed by the NUS Corporation. In April 1986, the Remedial Investigation/ Feasibility Study (RI/FS) was finalized. This study was conducted by NUS-FIT Corporation.

Site Ownership

The Northern and Central Tracts were owned by Joseph C. Hofgesang until his death on March 10, 1972. Following his death, ownership went to the current owner, the Hofgesang Foundation, Inc., which is a private foundation set up in perpetuity. The Southern Tract was owned until the mid-1960s by Gernert Court, Inc. During the mid-1960s, the company's name was changed to the Joseph C. Hofgesang Sand Company, Inc. This company owned the site until the Kentucky solid waste permit expired in November 1974, at which time J. H. Realty, Inc. acquired it. J. H. Realty, Inc. is the current owner of the Southern Tract.

CURRENT SITE STATUS

Surface Water, Soil, and Groundwater

The Remedial Investigation identified contaminants in the following media: surface water, soil, and groundwater. Onsite surface water contained very low levels of contaminants. Onsite soils and sediments were similar to the offsite background sample collected in Riverside Gardens, suggesting the use of local soils as cover material. Typical offsite soil concentration levels included arsenic (24 mg/kg), barium (92 mg/kg), chromium (20 mg/kg), lead (50 mg/kg), manganese (1200 mg/kg) and iron (35,000 mg/kg). In two areas where "hot spot" soil samples were collected, the estimated concentrations of lead and chromium were 2000 mg/kg (ppm) each. These areas were located along the access road in the central tract. They are believed to be the result of indiscriminant dumping since the concentrations found were not representative of overall soil concentrations.

Onsite groundwater contained low levels of organic compounds and some inorganic contaminants. The major inorganic contaminants included arsenic (87 ug/l), barium (1,100 ug/l), cadmium (22 ug/l), chromium (640 ug/l), lead (150 ug/l), manganese (44,000 ug/l) and iron (190,000 ug/l). The offsite concentrations of these contaminants were all below the maximum contaminant levels (MCL) set in the Interim Primary Drinking Water Standards. Manganese was detected at 610 ug/l in the Louisville Gas and Electric well and at 370 ug/l in an Indiana public water supply (PWS) well. Iron was detected at 8,900 ug/l in an Indiana PWS well, but was below background in both industrial wells. Neither manganese nor iron are considered to have significant health effects.

From the contaminants detected in the RI, lead, arsenic, benzene and chromium were selected as critical contaminants for further evaluation. This selection was based on the frequency of detection and/or chemical, biological, and toxicological properties. Table 1-1 provides a summary of the range of concentrations of the critical contaminants found in the various media at the Lees Lane Landfill Site.

TABLE 1-1
CRITICAL CONTAMINANT LEVELS
IN VARIOUS MEDIA
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

Critical Contaminant	Groundwater ug/l	Surface Water ug/l	Bottom Sediments mg/kg	Surface Soil mg/kg
Lead	0-150	0-10J	10J-100J	50J-2,000J
Arsenic	0-87	0	5.4-27	0-25
Benzene	0-450	0-5J	0-15J	0
Chromium	0-640	0-6.2	9.8-30J	10J-2,000J

J - Estimated value.

0 - Not detected.

Transport Routes - Groundwater

The major route for offsite migration of hazardous materials is groundwater discharge from the site. Most residents in the area use public water; however, approximately eleven homes still use domestic wells tapping the alluvial aquifer. Of these eleven wells, only eight are used for drinking water wells. Of the five drinking water wells sampled, no elevated contaminant levels were detected.

Public Health Assessment

A public health assessment was prepared to evaluate the potential health risks associated with the presence of hazardous substances at the site. This assessment concluded that the primary public health concern at the site was the elevated chromium levels found in onsite groundwater. In order to evaluate potential adverse health effects, the highest chromium concentration, 640 ug/l, detected in the onsite groundwater was used. Although unlikely, it is possible that drinking water containing 640 ug/l of chromium over a period of several years may lead to an increase in the chromium concentration of the liver and spleen. Chronic toxicological effects are possible at this level based on animal studies. No pathological changes have ever been associated with such low levels exposures. The dermal effects from bathing in water containing 640 ug/l would likewise appear remote, although chromium is recognized as a potent sensitizer of skin.

Gas/Air Migration Investigation

EPA tasked IT Corporation to inspect the site for gaseous contaminants and to determine the operational efficiency of the gas collection system. The samples from the gas extraction wells contained both methane and toxic gases demonstrating that the decomposition of landfill wastes is still producing gases with the potential to migrate via the subsurface or air to Riverside Gardens. The results of this investigation also indicated that the system was currently operating at less than 50% efficiency. Since 1980, Jefferson County has monitored the gas and the only time methane has been detected in the gas observation wells in Riverside Gardens was in April and May of 1984, at which time the blower system was not operating properly. This suggests, that although the system is operating at less than optimum efficiency, it is currently controlling lateral subsurface migration.

In November 1985, the Jefferson County Department of Public Works contracted SCS Engineers to inspect the gas collection system. Repairs of problem areas noted during the inspection were begun in December 1985 by Jefferson County under the supervision of SCS Engineers.

In January 1986, EPA launched an extensive air sampling study in order to respond to odor complaints by residents in Riverside Gardens (RG). The sampling plan was developed by EPA, KNREPC, Jefferson County Department of Health and the Agency for Toxic Substances and Disease Registry (ATSDR).

The objective of this plan was to determine if the RG residents are being adversely affected by methane or toxic gases detected in the atmosphere and if the source of these reported gaseous odors is the Lees Lane Landfill Site. The (January - June 1986) sampling program consisted of air/gas samples taken (1) from homes in Riverside Gardens, (2) at and around the vicinity of the landfill and (3) from the exhaust vent stack.

Results of these analyses showed organics present in the media sampled. However, all values were low (ppb). The conclusion drawn from this study is that the data collected does not suggest a health hazard for any potential receptors.

ENFORCEMENT ANALYSIS

EPA initially identified approximately 700-800 companies, individuals, and other entities as potentially responsible parties (PRPs) who had utilized the landfill for waste disposal. Several other companies were identified as PRPs from EPA waste survey forms.

EPA issued its first set of notice letters in June 1984 to the current and former owners and operators of the site, and to companies and individuals who may have disposed at the site. The notice letters offered the PRPs an opportunity to conduct the Remedial Investigation and Feasibility Study (RI/FS).

Many PRPs receiving the initial notice letters either failed to respond to the letter or gave inadequate responses. EPA mailed follow-up notice letters to a number of PRPs on April 1, 1985 in an effort to elicit full and complete responses to the June 1984 notice letters.

In December 1985, EPA issued a second set of notice letters to approximately 130 additional PRPs who had not received the initial notice letter. More than half of these letters were returned unopened to EPA. Further investigation indicated that most of the companies whose letters had been returned were no longer in business.

After reviewing all responses from the two rounds of notice letters, EPA determined that approximately thirty companies and individuals were considered to be PRPs, by virtue of either owning or operating the site, transporting hazardous substances to the site or arranging for disposal of hazardous substances at the site. Between January and March 1986, final notice letters were issued to 25 PRPs advising them that the RI/FS would be completed in March 1986. The letter also encouraged the PRPs to organize themselves into a steering committee for purposes of facilitating negotiation with EPA for the PRPs performance of the Remedial Design and Remedial Action (RD/RA). Consequently, a steering committee was formed by a group of PRPs.

EPA has received very positive indications from the PRPs that negotiations for the RD/RA will be successful. EPA presently anticipates that the consent order for RD/RA can be finalized and signed by September 30, 1986.

The Steering committee is aware that EPA has determined that alternative number three is the Agency's remedy of choice. The Steering Committee appears to be in agreement with this remedy and has not indicated to EPA that another remedy should be chosen.

Negotiations with the PRPs will not exceed 60 days. If the PRPs do not formally commit to perform the remedy with assurances that adequate funding is available to complete the remedy in a timely manner or if a consent order is not signed by September 30, 1986, EPA will proceed with a fund financed RD/RA.

ALTERNATIVES EVALUATION

The Remedial Investigation identified the following future potential public health concerns: 1) elevated chromium levels in the groundwater at and upgradient of the site and 2) the potential release of methane and hazardous gases to the air and subsurface. Since elevated chromium were detected in upgradient wells and no downgradient offsite impacts are evident, no remediation for groundwater was considered at this time.

Therefore, the public health objectives for this remedial action are as follows:

1. Construct a groundwater monitoring program that will serve as an early warning system should site conditions change.

2. Control the vertical and lateral subsurface migration of methane and other gases.

3. Institute a routine monitoring program that will serve to detect any undesirable and possible dangerous levels of methane and/or toxic vapors migrating into the Riverside Gardens neighborhood.

4. Institute an ambient air monitoring program.

The Remedial Investigation concluded that the concentrations of the critical contaminants do not represent a significant threat to the environmental receptors (i.e. plant and animal life) at the Lees Lane Landfill site. Biota in continued direct contact with elevated contaminant levels in selected "hot spot" soil areas may experience symptoms of chronic toxicity; however, no acute toxicological effects would be expected at the current contaminant levels.

Initial Screening of Remedial Action Technologies

A list of preliminary, applicable technologies was developed based on RI data. This list comprised actions that addressed the potential site problems and pathways of contamination identified during the RI. These technologies were then evaluated relative to the following criteria:

(1) technical considerations (reliability, implementability, etc.)

(2) public health and environmental considerations

(3) institutional considerations (permits, other laws, etc.)

(4) cost considerations

If the technology was rejected for use at the site under a particular criterion, it was eliminated from further consideration. (See Table 1-2 for the response action and the rationale for elimination of a particular technology).

Remedial Action Alternatives Retained For Detailed Evaluation

The NO-ACTION Alternative was evaluated in accordance with technical, public health and environmental criteria to determine the effect of not performing additional remedial actions at the site. Under this alternative the low level contamination of the groundwater could continue. Changes in groundwater contaminant level would not be detected, due to the absence of groundwater monitoring. Similarly, the gas collection system may deteriorate and an unknown quantities of gases may be released to the air or migrate into nearby homes, leading to an increased health risk.

The remaining alternatives (Alternatives 1-6) were subjected to detailed analyses involving both non-cost and cost criteria. Non-cost criteria included technical, public health, environmental, and institutional considerations. See Table 1-3 for a summary of remedial action alternatives. Each alternative was assessed for its effect upon the existing floodplains and wetlands. Cost criteria included capital costs, operation and maintenance costs and a present worth calculation. See Table 1-4 for a cost summary of the six alternatives described below:

Alternative 1 - No Remedial Action - Monitoring
Alternative 2 - Gas Collection and Venting System, and Monitoring
Alternative 3 - Surface Waste Area Cleanup, Bank Protection Controls, Gas Collection and Venting System, and Monitoring

Alternative 4 - Capping, Regrading and Revegetation, Surface Waste Area Cleanup, Bank Protection Controls, Gas Collection and Venting System, and Monitoring
Alternative 5 - Excavation and Backfilling, Regrading and Revegetation, Onsite Incineration, Offsite Fly Ash Disposal, and Monitoring
Alternative 6 - Excavation and Backfilling, Regrading and Revegetation, Offsite Disposal, and Monitoring

TABLE 1-2

SCREENING ALTERNATIVE TECHNOLOGIES FOR
APPLICABILITY TO LEES LANE LANDFILL SITE

Remedial Technologies	Retained (R) or Eliminated (E)	Reason Eliminated
No Action		
° No Action	R	
° Monitoring	R	
Alternate Water Supply		
° Municipal Water Supply Hookup	R	
° Bottled Water	E	Short-term solution
° Individual Treatment Units	E	Requires extensive monitoring and maintenance
Containment		
° Surface Capping-Clay	R	
° Bank Protection Controls-Riprap	R	
° Groundwater Barriers	E	Serious construction problems
Diversion		
° Surface Regrading and Revegetation	R-if capping or excavation are performed	
° Levees	E	Additional flooding would be caused downstream and floods exceeding the 100-year event would overlap the new levee and create turbulence.
° Terraces and Benches	R	

TABLE 1-2 (Continued)

Remedial Technologies	Retained (R) or Eliminated (E)	Reason Eliminated
Collection		
° Leachate Collection	E	Impractical and Infeasible
° Gas Collection and/or venting	R	
° Groundwater Collection	E	Extraction of groundwater from beneath the site through the use of pumping wells is judged not practical and/or effective
Reduction		
° Removal and/or control of surface waste	R	
In-site Treatment		
° Leachate Treatment	E	Leachate collection eliminated
° Incineration-Rotary Kiln	R	
Off-site Treatment		
° Leachate Treatment	E	Leachate collection eliminated
Incineration	E	Problems involved with storage and handling requirements of waste
In-situ Treatment		
° Inplace Treatment of Soils	E	Due to depth of contaminated soils and the unknown nature of waste
Complete Removal		
Removal of contaminated soil/sediment	E	Levels of contamination in surface media are very low and present no health or environmental hazards

TABLE 1-2 (continued)

Remedial Technologies	Retained (R) or Eliminated (E)	Reason Eliminated
Off-site Disposal		
° Landfilling	R	
° Incineration	R	
On-site Disposal		
° Landfilling	E	Site lies within the 100 year floodplain. A new landfill could not be constructed in a floodpla consistent with RCRA regulations.
° Incineration	R	

TABLE 1-4

SUMMARY OF CAPITAL O&M AND PRESENT WORTH COST FOR
REMEDIAL ACTION ALTERNATIVES LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

Alternatives	Capital Costs ($) 1,000		O&M Costs ($) 1,000*		Total Cost ($) 1,000	
	Actual	Present Worth	Actual	Present Worth	Actual	Present Worth
1	106	106	285	235	391	341
2	132	132	515	307	647	439
3	2,343	2,343	566	339	2,909	2,682
4	42,067	15,589	616	357	42,683	15,946
5	39,906	24,051	378,206	141,715	418,112	165,766
6	648,971	261,295	308	243	649,279	261,538

* O&M Costs are shown for a three-year period.

TABLE
SUMMARY OF REMEDIAL ACTION ALTERNATIVES
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

Alternative	Cost ($) 1,000 Actual	Cost ($) 1,000 Present Worth	Public Health Concern	Environmental Concern	Technical Concern	Other Concerns
No Action	0	0	Gas migration and direct contact with surface wastes	Leachate and waste release to Ohio River	-	Community disapproval
No Remedial Action Monitoring	391	341	Gas migration and direct contact with surface wastes	Leachate and waste release to Ohio River	-	Community disapproval
Gas Collection and Venting System, and Monitoring	647	439	Direct contact with surface wastes	Leachate and waste release to Ohio River	-	-
Surface Waste Area Cleanup, Bank Protection Controls, Gas Collection and Venting System, and Monitoring	2,909	2,682	Minimal	Leachate release to Ohio River	-	-
Capping, Regrading and Revegetation, Surface Waste Area Cleanup, Bank Protection Controls, Gas Collection and Venting System, and Monitoring	42,683	15,946	Minimal	Leachate release to Ohio River	Time for implementation Cap damage from Ohio River runon during flooding	Transportation of capping material through Riverside Gardens
Excavation and Backfilling, Regrading and Revegetation, Onsite Incineration, Offsite Fly Ash Disposal, and Monitoring	418,112	165,766	Gas and particulate migration during excavation	Migration of wastes from flooding during excavation	Coordination of excavation and incineration. Time for implementation	Transportation of wastes through Riverside Gardens
Excavation and Backfilling, Regrading and Revegetation, Offsite Disposal, and Monitoring	649,279	261,538	Gas and particulate migration during excavation	Migration of wastes from flooding during excavation	Coordination of excavation and transportation of wastes. Time for implementation	Transportation of wastes through Riverside Gardens

Alternative 1 No Remedial Action - Monitoring

This alternative does not address the remediation of the site nor the potential threat to the public or the environment via the contamination pathways. However, a multi-media monitoring program will provide information so that possible adverse public health or environmental impacts that may arise can be addressed. Based upon the conclusions of the Remedial Investigation (RI), gas migration is considered a significant problem at the site. Therefore, at a minimum, an air monitoring program would be implemented followed by the installation of gas monitoring wells, and implementation of the gas and groundwater monitoring programs.

Alternative 2: Gas Collection and Venting, and Monitoring

This alternative includes a gas, air, and groundwater monitoring program, the provision of a properly operating gas collection system and consideration of a possible future alternate water supply. Any problems remaining in the gas collection system would be corrected after a determination of the extent of the necessary modifications to the system is made. Implementation of this alternative would ensure that gas migration, the most significant potential problem at the site, is addressed.

Alternative 3: Surface Waste Area Cleanup, Bank Protection Controls, Gas Collection and Venting System, and Monitoring

This alternative includes the monitoring program described in Alternative 1, the provision of a properly operating gas collection system, consideration of a future alternate water supply, cleanup of the surface waste areas, and bank protection controls. The monitoring program included in this and the following alternative contains provisions for the sampling of an additional groundwater monitor well to aid in determining alternate concentration limits (ACLs). Surface waste cleanup would involve removal of exposed drums, capping of "hot spot" soils and an area containing exposed trash. The drums would be analyzed prior to excavation and removed to an approved landfill. Riprap would be installed to minimize erosion potential and failure of the Ohio River embankment. The entire bank (29 acres) along the Ohio River would be stabilzed. In addition, cautionary signs, will be posted. One gate would be installed at the Putnam Street access point.

Alternative 4: Capping, Regrading and Revegetation, Surface Waste Area Cleanup, Bank Protection Controls, Gas Collection and Venting System, and Monitoring

In addition to monitoring, surface waste area cleanup, bank protection controls, gas collection and venting system, and consideration of a possible future alternate water supply, a cap would be installed over the entire landfill to minimize leachate generation from infiltrating rainfall and to control vertical movement of gas. Regrading and revegetation will be neccessary to provide maximum drainage of the area. Both the capping and bank protection controls would require some clearing of vegetation.

This onsite alternative will comply with other appropriate environmental laws. The cap described above would meet the criteria outlined in RCRA.

Alternative 5: Excavation and Backfilling, Regrading and Revegetation, Onsite Incineration, Offsite Fly Ash Disposal, and Monitoring

The site is estimated to have a total volume of 4,400,000 cubic yards; however, based on site sampling, ferromagnetic surveys, and historial photographs approximately 2,400,000 cubic yards will be excavated. The depth of excavation will vary widely at the site ranging from 5 feet in portions of the central tract to 40 feet in parts of the northern tract of the landfill. Backhoes and power shovels will be used for the removal of surface material and any additional dry fill, while draglines will be employed for the removal of wet fill. Following excavation the site will be backfilled, regraded and revegetated. Backfilling will be conducted concurrently with excavation to maintain the integrity of the landfill and prevent the accumulation of water. Backfill material will be brought from offsite sources, since no onsite source is available. After segregation of the 2,400,000 cubic yards of waste excavated, approximately 1,560,000 cubic yards are expected to be suitable for incineration and the remainder should be segregated and disposed of at an appropriate landfill.

Byproducts of the incineration process include products of incomplete combustion, fly ash, and atmospheric emissions. The fly ash, due to potentially high metals concentrations, will be disposed of in an approved RCRA landfill. Atmospheric emissions will be controlled by a venturi scrubber, with scrubber water neutralized with lime prior to discharge. Additional treatment of existing gases and wastewater may be required and will be evaluated prior to construction.

This alternative will include the monitoring program discussed in Alternative 1.

Alternative 6: Excavation and Backfilling, Regrading and Revegetation, Offsite Disposal, and Monitoring

In addition to monitoring, this alternative will result in the excavation and offsite disposal of approximately 2,400,000 cubic yards of fill in a RCRA approved landfill. Excavation and backfilling, regrading and revegetation have been described in Alternative 5.

Comparsion of Remedial Alternatives

The NO-ACTION alternative did nothing to remedy public health and environmental concerns (i.e. direct contact to "hot spot" areas, the potential for gas migration to impact Riverside Gardens, and possible migration of contaminated groundwater). These actions were determined to be a necessary part of any remedy. Therefore, the NO-ACTION alternative was eliminated from further consideration.

The NO-ACTION - MONITORING alternative would not reduce or eliminate any of the impacts resulting from the site contaminants. It would only provide information about the movement of the contaminants so that future remedial actions could be taken when necessary. Public health concerns such as gas migration and direct contact with surface waste would not addressed; therefore, this alternative was eliminated.

ALTERNATIVE 2 which includes a properly operating gas collection and venting system in addition to a monitoring program was also eliminated from further consideration because all applicable public health concerns were not addressed (i.e. direct contact to "hot spot" areas).

ALTERNATIVE 3 would address the potential release of methane and hazardous gases to the air and subsurface by providing for a gas and air monitoring system. It would also provide for a groundwater monitoring program to establish baseline conditions at the site and also to serve as an early warning of contaminant migration. Riprap would be installed to prevent erosion of the Ohio River bank. Direct contact to hot spot areas and exposed drums would be remediated by capping "hot spot" areas and removing drums. The remedial action components described above would achieve the public health and environmental objectives established in the Remedial Investigation at the lowest cost; therefore, it was chosen as the preferred alternative.

ALTERNATIVE 4, landfill capping, a well documented technology, would serve to minimize the generation of leachate resulting from surface water infiltration and control vertical movement of gas generated in the landfill However, capping was not considered appliable for the site due to the following reasons: (1) the site lies in a floodplain, (2) capping the site would enhance the lateral migration of gases and possibly exacerbate the problems with the gas collection and venting system, (3) the site is well-vegetated with trees, shrubs, and brushes etc; capping would involve clearing the site and re-vegetating the area, and (4) implementation of this remedy could require a long period of time to complete (22 years) and (5) the potential public health risk associated with the transport of large amount of waste through the neighborhood. Therefore, Alternative 4 was eliminated.

ALTERNATIVE 5, onsite incineration, is also a well-established technology and would effectively destroy all principal organic hazardous constituents found in the waste material. However, this technology would not be suitable for the decompostion of many of the metals found onsite. The implementation of Alternative 5 has the potential to significantly impact public health. During the excavation procedure, especially with methane gas present, the opportunity for offsite migration of contaminants is greatly increased. Pathways for this migration include airborne particulates gas emission and surface runoff. Receptors in the area would be susceptible to inhalation of gas as well as contaminant laden particulates, the ingestion of particules and direct contact with wastes. The technical feasibility associated with this remedy is also of concern. The implementation time associated with costs for this alternative is 24 years.

ALTERNATIVE 6, disposal of waste in an offsite landfill, is a permanent remedial action and would provide a very high level of environmental and public health protection at the site. It would prevent any further movement contamination. Implementation problems associated with this remedy include coordination and transporation of a large quantity (2,400,000 cubic yds.) of material to be excavated. Due to the volume to be disposed, it may be necessary to utilize more than one landfill facility.

The costs for implementation of Alternatives 5 and 6 would be $418,112,000 and $649,279,000, respectfully. These costs are two orders of magnitude higher than Alternative 3 which also addresses the identified public and environmental concerns at the site. Therefore, selection of these alternatives would not be cost effective.

COMMUNITY RELATIONS

A public meeting was held on October 14, 1985, to present a summary of the RI/FS process and to explain the proposed remedies for the cleanup of the landfill. To aid in this presentation a fact sheet was prepared for the meeting. The public comment period officially closed on Nov. 6, 1985. Comments received were responded to and are in summary form in the attached Responsiveness Summary.

CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

The NCP requires that other environmental laws be considered in determining the appropriate action for the site. Other environmental laws which may be applicable or relevant and appropriate to the recommended alternative are the Resource Conservation and Recovery Act (RCRA), Floodplain Management Executive Order (E.O. 11988) and the Wetland Executive Order (E.O. 11990).

The provisions of RCRA applicable to the recommended alternative at Lees Lane Landfill would be 40 CFR Part 263, Standards Applicable to Transporters of Hazardous Waste, and the 40 CFR 264 subpart F Groundwater Protection Standards. The regulations set forth in 40 CFR Part 263 would apply to the transportation of the drums removed. Transporters are required to obtain an EPA identification number, register the material in accordance with the manifest system requirements and perform analyses of the drum contents to meet these requirements.

The RCRA Groundwater Protection Standards require corrective action if hazardous constituents are found in groundwater in excess of established concentration limits or above background levels. However, if it can be demonstrated that an alternative concentration limit (ACL) will not pose a substantial present or potential hazard to human health or the environment, then corrective action is not required. The current groundwater conditions does not present an immediate threat to the public health and the environment. Based on the hydrogeology at the site, it is expected that two years of

groundwater data will have to be assembled before the ACL demonstration process can be initiated. The proposed monitoring systems will enable us to establish an ACL for this site. After ACLs are established the Agency will decide if further groundwater remedies are necessary.

The Floodplain Management Executive Order may not be applicable because the excavation and removal of the exposed drums and "hot spot" and bank protection controls should have little effect on the floodplain. The Wetland Executive Order would not be applicable because this alternative involves remedial methods outside the wetland area.

RECOMMENDED ALTERNATIVE

Alternative 3 was chosen as the recommended alternative for implementation at the Lees Lane Landfill site. This alternative is cost effective and will effectively mitigate and minimize threats to and provide adequate protection of public health, welfare and the environment. The total capital costs associated with this remedy is $2,343,000. The capital cost for surface waste area cleanup is sensitive to the number of drums and size of areas to be covered. Due to the variable nature of drum removal a 15 percent factor was used for the sensitivity analysis. The bank protection controls are sensitive to the total area to be protected and cleared and a variation of 20 percent in capital costs was used in the sensitivity analysis. These variations resulted in a range costs from $2,243,000 to $3,123,000.

OPERATION AND MAINTENANCE (O & M)

Operation and maintenance activities include inspection of the gas monitoring wells, quarterly gas and groundwater sampling and analysis, and sampling of air three times per year. Other O & M activities include inspection and maintenance of the gas collection system, capped waste areas, and the riprap along the Ohio River bank.

The total projected O & M costs excluding the O & M costs for monitoring gas, groundwater, and air after the 3rd year is $566,000. After three years of monitoring, the monitoring plan will be re-evaluated by EPA. (See Table 1-5 for cost summary of capital and O & M cost).

SCHEDULE

ACTIVITY	DATE
Finalize EDD	September '86
Sign Consent Order	September '86
Draft Remedial Action Plan Deliverable	November '86

TABLE 1-5
COST SUMMARY - SURFACE WASTE AREA CLEANUP, BANK PROTECTION CONTROLS, GAS COLLECTION SYSTEM, AND MONITORING
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

A. Estimation of Costs[1]

Alternative Components	Time to Construct (Yr.)	Capital Costs ($)	O & M Costs ($) Period (Yr.)	O & M Costs ($) Annual ($)	O & M Costs ($) Total ($)	Total Costs ($)
1. Monitoring	1	105,000	1 3	24,000(2) 94,870	309,000	414,000
2. Gas Collection System	1	26,000	30	7,680	230,000	256,000
3. Surface Waste Areas	1	294,000	30	120	3,600	298,000
4. Bank Protection Controls	1	1,917,000	30	770	23,000	1,940,000
5. Gate and Signs	1	1,000	-	-	-	1,000
Total Costs		**2,343,000**		**127,440**	**566,000**	**2,909,000**

(1) All costs are rounded to the nearest 1,000 dollars, except O & M.

(2) Costs for complete Appendix VIII analyses on one well quarterly the first year.

FUTURE ACTIONS

Future actions at the site will include Operation and Maintenance activities.

LEES LANE LANDFILL

LOUISVILLE, KENTUCKY

DRAFT RESPONSIVENESS SUMMARY

This community relations responsiveness summary is divided into the following sections:

Section 1.0 Overview. This section discusses EPA's preferred alternative for remedial action, and likely public reaction to this alternative.

Section 2.0 Background on Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during remedial planning activities at the Lees Lane Landfill Site.

Section 3.0 Summary of Major Comments Received during the Public Comment Period and the EPA Responses to the Comments. Both written and oral comments are categorized by relevant topics. EPA responses to these major comments are also provided.

Section 4.0 Remaining Concerns. This section describes remaining community concerns that EPA did not address directly during the Remedial Investigation/Feasibility Study, and how EPA proposes to handle these concerns.

In addition to the above sections, Attachment A, included as a part of this responsiveness summary, identifies community relations activities conducted at the Lees Lane Landfill Site prior to and during the public comment period.

1.0 OVERVIEW

At the time of the public meeting and the public comment period, EPA had not selected a single preferred alternative for the Lees Lane Landfill site. Instead the draft feasibility study presented six (6) alternatives. These alternatives address the problems of groundwater contamination, soil contamination and the potential for gas migration into the Riverside Gardens community.

The recommended alternative that will be specified in the decision document involves surface waste area cleanup, bank protection controls, gas collection and venting system, and monitoring. The monitoring program includes sampling groundwater monitoring wells to determine baseline groundwater quality at the site. The surface waste clean-up will reduce the possibility of direct contact since site access is not restricted. The installation of bank protection controls will minimize erosion and failure of the Ohio River bank.

Judging from the comments received during the public meeting and the three week comment period, the residents of Riverside Gardens believe that EPA should consider an alternate solution to the problem. The residents would prefer relocation and buy-out of their homes and property as a viable solution.

Section 3.0 provides a more detailed discussion of individual preferences and concerns.

2.0 Background On Community Involvement And Concerns

Community involvement at the Lees Lane Landfill has centered primarily around Riverside Gardens residents. They established the Riverside Gardens Community Council in 1969. This council was recently headed by Jo Anne Schlatter, but is now under the leadership of Pat Moran.

The first official complaint was filed with the county in 1964, after which complaints from residents of Riverside Gardens were filed frequently. Fires, lack of proper cover, excavation of the flood wall, open dumping, chemical dumping, midnight dumping, and foul odors were all cited complaints filed with the Jefferson County Health Department. Methane gas began entering homes adjacent to the landfill during the spring of 1975.

The Riverside Gardens Community Council is actively monitoring all developments at the landfill and have been highly vocal in expressing their concerns to the county, state, EPA, and the local media.

The major concerns expressed during the remedial planning activities; and how EPA, the county, and state addressed these concerns are described below:

1) Has the problem of methane gas been permanently solved or will we be threatened once again?

EPA Response:

Based on the data gathered during the Remedial Investigation, the gas collection system is working toward alleviating problems related to the migration of landfill-gas to the Riverside Gardens area. EPA's recommended remedy involves inspection and repair of the gas collection system along with air and gas monitoring. Therefore, we will be forewarned of any potential problems that might evolve.

2) Will air emissions from vented gas pose a health threat to the community?

EPA Response:

EPA is currently implementing an air study at and in the vicinity of the Lees Lane Landfill site to address health related concerns. EPA cannot make a determination regarding these health issues without more representative air data. However, the samples that we have analyzed do not show any elevated levels of contaminants.

3) Local officials questioned know whether EPA would fund a long-term monitoring and gas venting system.

EPA Response:

EPA's recommended alternative includes inspection and repair of the monitoring and gas venting system. Responsible parties for the site will be given an opportunity to implement this remedy. If they choose not to participate, then Superfund monies will be appropriated, if applicable. Operation and Maintenance (O&M) will be provided by EPA for one year and the State will be responsible for the remainder of the O&M period.

4) What about the potential for groundwater contamination?

EPA Response:

EPA recognizes that there is a potential for groundwater contamination from the site. Therefore, EPA's recommended remedy includes groundwater monitoring for a period of time.

5) What are the contaminants in the landfill and what effect will these have on the community?

EPA Response:

The site was used for disposal of domestic, commercial, and industrial waste. Due to health risks involved with drilling through the fill, the nature and extent of the waste was not characterized.

Based on the Remedial Investigation, a Health Assessment was developed which evaluated potential health risks associated with the presence of hazardous substances at the site and the effects of these substances on groundwater, surface water and sediment. The assessment concluded that there was no current evidence of an offsite problem related to the landfill site. (The presence of hazardous substances in the air or landfill gas is currently being addressed though a seperate EPA study and will be evaluated in a separate report at a later time).

6) Is there a health threat from the chemicals migrating off site?

EPA Response:

The Public Health Assessment in the Remedial Investigation concluded that there is no current evidence of an offsite problem related to the groundwater, surface water, or sediment at the landfill site. (A separate air study is presently being conducted by the EPA and the results will be evaluted in a later report). If an offsite migration problem does evolve, then the issues will be evaluated.

7) Since people are hunting and our children are still playing on the property, what is EPA going to do about the open access to the landfill?

EPA Response:

EPA's recommended alternative will include posting cautionary signs. These signs will inform the public of the site conditions and potential risks.

8) How will you keep us, public officials, up-to-date on site activities and plans that EPA is developing?

EPA Response:

EPA will keep the State informed of site activities and plans for the site. The State requested that they be responsible for contacting county and local officials.

9) Will the landfill ever be used as a dump again? Can it be developed? Can access to the river be restored? Will the community ever be able to use the land?

EPA Response:

Future land use for the site has not been determined.

10) Jefferson County wanted to know whether the Superfund Program would pay for both past and future cleanup costs?

EPA Response:

Since responsible parties have been identified for this site, they will be given the opportunity to settle the cleanup costs with the Agency. If they choose not to come forward and Superfund monies are expended, the Agency may seek legal recourse to recover the monies spent.

3.0 SUMMARY OF PUBLIC COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD AND AGENCY RESPONSES

Comments raised during the Lees Lane Landfill Site public comment period are summarized briefly below. The comment period was held from October 15 to November 6, 1985 to receive comments from the public on the draft Remedial Investigation/Feasibility Study. The comments received during the comment period are categorized by relevant topics. At the time of the public comment period, EPA had not selected the recommended alternative.

Technical Questions/Concerns Regarding the Site History

1.0 What chemicals were found in the 400 drums in the landfill?

EPA Response: Organics, heavy metals, phenol, and benzene were found in the drums.

2.0 What was the condition of the 400 drums found on the landfill?

EPA Response: The exposed drums were badly rusted.

Technical Questions/Concerns Regarding RI/FS

3.0 Do you know if there is any groundwater contamination at locations other than where you sampled?

EPA Response: The groundwater program in the RI was used as a basis to determine the overall groundwater quality on and off site.

4.0 How do we remove the barrels out of the landfill? How do you clean up the landfill? We would like to see the waste removed.

EPA Response: The only technology that would actually be able to take the waste out would be excavation. The material itself could be either incinerated or taken to an approved landfill for disposal.

5.0 Will you excavate the entire landfill?

EPA Response: At this time EPA has not decided on the remedy.

6.0 Has EPA or any other level of government considered relocating the residents in the neighborhood?

EPA Response: EPA has not considered relocation as a remedial alternative.

7.0 This study is incomplete because only certain areas were investigated.

EPA Response: The Remedial Investigation was designed to adequately characterize the site. Due to both time and cost factors involved, it was impossible to cover all areas.

8.0 Why wasn't a fence put around the site? Why weren't warning signs posted to keep people off the landfill?

EPA Response: Posting signs and erecting a fence will not necessarily limit the number of people from going on site. People will climb the fence and the signs will be ignored. However, EPA is considering posting signs as part of the remedial alternatives.

9.0 According to the report, the 212,000 tons of waste were used to estimate the total amount of waste in the landfill. So am I correct in saying that the 2.4 million cubic yards is just from the four companies?

EPA Response: The total volume of waste estimated in the landfill was 2.4 million cubic yards. This number was derived by geophysical methods and also information gathered during the Remedial Investigation.

10.0 You stated that there were two residential homes and a church on wells that are being used for a water supply. I know positively that there are five families.

EPA Response: We would appreciate their names and addresses. During the RI we canvased the neighborhood in an effort to find every well we could.

EPA Clarification: The final Remedial Investigation/Feasibility Study Reports identified a total of 8 private drinking water wells in the Riverside Gardens neighborhood.

11.0 What do you think will happen when the chemicals that are in the landfill go into the Ohio River?

EPA Response: In order to determine the worst case for potential groundwater contaminants to enter the Ohio River, the groundwater flow was calculated using the highest permeability value and hydraulic gradient. The dilution rate was estimated to be 67,000 to 1. This means that the flow rate in the Ohio River is so great that it is 67,000 parts of Ohio River to every one part that comes out of the landfill.

12.0 What do you have to say about the radioactive waste over there?

EPA Response: Radiation was not detected at the site during our site investigation.

13.0 How much did the study cost?

EPA Response: The cost of the study should be around $500,000.

14.0 Have any PVC's or any other cancer causing chemicals been found at the landfill?

EPA Response: Benzene and polyvinyl chloride were detected in one of the gas studies.

15.0 Did the 212,000 tons of waste just come from four companies? In the report it states that over 100 companies dumped in the landfill. Do you have records of how much they dumped?

EPA Response: Yes, the four companies are responsible for the 212,000 tons of waste. We do not have records of how much the other 96 companies dumped at the landfill. Identifying companies and the amount of waste they dumped is a part of the enforcement process.

16.0 A citizen stated that he knows that the sand pits were at least 150 to 200 feet deep.

EPA Response: EPA based their estimated depth on the data collected during implementation of the gas collection system. The maximum depth of waste which was detected is approximately 40 feet. The water table is approximately 50 feet below the ground surface. To excavate beyond 50 feet would require a dewatering process. If the site is 100 feet deep, this means we have miscalculated the quanity of waste and therefore the cost to remove the waste would be greater than we estimated. This calculation would only be important if excavation was chosen as the recommended remedy.

17.0 What does EPA plan to do with the drums that are along the river?

EPA Response: As part of the remedial action, the drums will be sampled and if they are hazardous, they will be removed.

EPA Clarification: The Feasibility Study includes the removal of these drums. Prior to removal, samples will be collected for use in determining the proper means of disposal.

18.0 A citizen stated that the liquid is running out of the drums into the Ohio River. I am concerned about our water supply.

EPA Response: The Emergency Response Unit inspected the drums and concluded that they did not pose an immediate threat to the public, and therefore, did not require an emergency removal. It was decided that these drums would be addressed during the remedial action phase.

Questions/Concerns Related to Gas Migration

19.0 Why wasn't the venting system maintained after it was installed to control the migration of methane gas to Riverside Gardens?

EPA Response: This question should be referred to the county government. The Public Works Department is responsible for Operation and Maintenance of the gas collection system.

20.0 Initially, I believe you were trying to keep us from being blown up in an exposion by the gas. But now it appears that you are suffocating us. The vent pipe is blowing all over Riverside Gardens. Am I right or wrong?

EPA Response: Supposedly, the system was designed to burn the gas off before it is vented to the atmosphere. Although I'm not sure if the gas is being burned, I do know that the blower house is working because you can hear it blowing.

EPA Clarification: A burner was not installed as part of the gas collection system.

21.0 What if rocket fuel was dumped into the landfill? There is a rumor that a local chemical company manufactured rocket fuel for Redstone Arsenal.

EPA Response: I assume you are talking about hydrozene, the most common rocket fuel used today. If it were spilled or dumped out, it would have volatized, hence, no longer being a problem. If it hasn't been exposed to the air, then it would depend on the concentrations in the well.

22.0 The generation of methane could last 20 years based on EPA's fifty foot depth of the waste in landfill. So, if it is 100 to 150 feet deep, does that mean a 60-year time period of methane being generated in the landfill.

EPA Response: It would be hard to estimate how long methane will be generated in the landfill. The amount of time that methane can be generated varies.

23.0 Wouldn't it have been feasible to find out which way the wind blew before the venting system was ever installed?

EPA Response: We have a report that shows the prevailing wind direction most of the time. However, the wind doesn't blow in the same direction all the time.

24.0 Is this venting system safe?

EPA Response: Yes, the system is safe if it is operating properly and if the gas is being burned.

EPA Clairification: Based on our knowledge if the venting system is operating properly, the system is safe.

25.0 Do you have a pump that is pumping the gas?

EPA Response: The gas collection system was designed to include a series of 31 wells. They are all tied into a common header and they are under negative pressure. They pull all this gas into the blower house.

26.0 Is the gas burned or just discharged into the atmosphere?

EPA Response: They should have a propane supply down there that actually burns this gas.

Correction to EPA Response: EPA's response was not correct. The gas venting system was designed to have a burner but it was decided by the county not to include it. The gas would be vented to the atmosphere.

27.0 How often is the pump checked?

EPA Response: You need to check with the county. They are responsible for maintaining the venting system.

28.0 How can we believe you, the EPA, the County Health Department and county government when the venting system has been allowed to get in its present condition?

EPA Response: Again, the upkeep of the venting system was the responsibility of the Public Works Department, Jefferson County. If the repair of the system is chosen as one of the recommended alternatives, then the operation and maintenance of that system will be the responsibility of EPA the first year, then it will be the state's responsibility.

29.0 Did the county receive the report in December of '84 that reported the venting system was working at 42 percent? Why didn't the company that did the gas evaluation report send a copy to the county.

EPA Response: That was an oversight, probably on EPA's part. If the conclusions drawn from that study had determined that there was a great threat to the public health, everyone would have been made aware of the danger. The report was included as part of the remedial investigation and feasibility study and the county was given that report.

30.0 How long was the venting system off and what amount of time did it take with the system off for the gas to be detected?

EPA Response: I have no idea. When we saw the data that showed a reading, we did question them. The data sheet said the blower house was off. That is what drove us to the conclusion that when the blower house is on, that the system is still working.

31.0 Is special monitoring being conducted in areas where the test wells are located to find out if anything has been migrating in those particular areas?

EPA Response: The field work was completed before we were made aware of the residents complaints. When it was brought to EPA's attention we did in fact come out and sample. We have also committed to further sampling and monitoring. We have been working with Pat Moran trying to find out when there are complaints of the gas in the neighborhood. When the odor is detected, we will be available to come down and do some air sampling. As far as the air sampling is concerned it is not cut and dry. We are still committed to coming out and addressing that issue.

32.0 What do you have to compare with the air samples in 1984?

EPA Response: Gas well air samples from the previous studies are included in this report. These samples were taken in probes I-3B, I-4B, I-5B and I-10B. I don't believe ambient air samples are included in the report because the ambient air samples did not detect anything. Ambient air samples were taken. I have copies of the results back in my office which can be made available to you.

33.0 What does it mean when the report talks about the volume of the methane in the wells being 83 percent?

EPA Response: If you have a cup filled with 100 percent of air, 83 percent of the air would be methane.

34.0 Do you know the percentage of the methane that is being vented into the atmosphere?

EPA Response: I have no idea. I don't think a sample has ever been pulled from that vent. However, if methane was being vented into the atmosphere, it would not be a volume of 83 percent because the atmosphere has a larger volume than the well space.

35.0 If a test were done on one of the venting systems that was working properly, you should have zero methane, or no trace of methane, is that right?

EPA Response: Right, (if there is a burner on the gas collection system) there should be no methane, but as far as I know no samples have been taken.

EPA Clairfication: There is no burner on the gas collction system and therefore, methane should be detected in the exhaust.

Health Related Questions/Concerns

36.0 What adverse health effects are we being subjected to by breathing this air daily which contains chemicals/gases from the landfill?

EPA Response: EPA has committed to doing more air monitoring in the neighborhood. At this time none of the studies show that there are ambient air problems.

37.0 Has EPA or CDC canvassed the neighborhood to see if there are any birth defects or a type of cancer which is prevalent in the neighborhood? How can you say that there is no problem yet, since you haven't gone to the neighborhood to see?

EPA Response: To answer your first question, no, we have not canvased the community. And at this point we have no intentions of doing it as you propose. The main reason being, we see no indication that there is an imminent public health threat being posed to people living in Riverside Gardens from Lees Lane Landfill. If that were the case, we would work cooperatively with both the Louisville and Jefferson County Health Department and the State Health Department in Frankfort to determine whether or not the alleged problems may in fact be due to or were due to exposures to substances coming from the site.

38.0 This site appears to be similar to Love Canal. No, the school isn't located on top of the landfill, but the community is around the landfill. At Love Canal the barrels started surfacing and it took them a long time before they finally got the EPA and everybody to say that there was a problem. I wouldn't want that to happen here.

EPA Response: I agree with what you are saying. That is one of the reasons that we have listed monitoring in all the remedial alternatives so that we would be able to identify a problem if one arises and also define the extent of the problem.

39.0 Would you feel safe with your families living in this neighborhood?

EPA Response: Based on the data and information we have looked at so far, yes I would. The site does not pose an imminent health threat but the area is unsafe for children playing at the site.

40.0 Have you talked with the Fire Department or the Police Department about what goes on back here? The Fire Department evacuated a family in 1983 for two nights, allegedly because of dangerous gas from the landfill.

EPA Response: No, we have not talked with these two departments but we are interested in their opinion.

41.0 How dangerous is the water to us when the groundwater level is up for just a short period of time?

EPA Response: It should not be dangerous at all.

42.0 What about future health concerns? What are we going to learn in the next five to ten years from living in these conditions?

EPA Response: One of the things we hope you try to realize, and be sensitive to as well, is that we don't have all the answers. There is a lot that we don't know, and we just have to deal with that the best we can.

43.0 Everything that I have read in the report talks about explosion potential and so forth. What about health effects from the gas, especially when the water level has been up for three or four months?

EPA Response: In order to fully address your concerns, we need to first establish a link or have a strong suspicion that a link exists between the residents' health complaints and the landfill.

Technical Questions/Concerns Regarding Future Actions

44.0 Could an industry be put on the landfill after your next action?

EPA Response: This decision will be made by the county zoning department.

45.0 Why not let the City of Louisville buy this whole neighborhood and make a dump out of it?

EPA Response: We cannot respond to that question.

Questions/Concerns regarding the Superfund Process

46.0 Is this the only input we will get or do the people have anything to say about the remedial decisions? Are you just going to take our opinion and then you (EPA) make the decision?

EPA Response: The process works as follows: After tonight you will have until November 6th to comment on the remedial reports. We will then respond to those comments in a responsiveness summary. You will be informed on the selected remedy.

47.0 So how do we get people to respond? Do we have to write letters? What do they have to do?

EPA Response: Your should send your written comments to the EPA office, addressed to me, Beverly Houston. Our address may be found in the back fo the fact sheet. We would like to strongly encourage you, if you do have a question or a concern, to make us aware of it. All comments will be included in the responsiveness summary, including those made here tonight.

Question/Concerns Related to the Enforcement Process

48.0 Are there any funds available to do any remedial action down here?

EPA Response: Since this is an enforcement site, there are potentially responsible parties (PRP's). PRP's are people responsible for putting the waste in the landfill. The enforcement section at EPA is currently in the process of identifying and noticing those people that there is a problem and also giving them the opportunity to actually implement whatever remedial action is determined to be correct remedy. So the first option is to try to get the potentially responsible parties to come forth any pay for the clean-up. If the PRP's say no,, we are not going to do anything, then EPA will come forth and actually implement the remedy. Once the PRP's have been notified, they will have 60 days to come forth and commit to doing the remedial action. So at this point it is hard to say who will pay for the clean-up.

Written Comments/Questions Received by the Agency

49.0 "Has any calculation been made of the anticipated levels of methane and other gas production, and production of volatile organics, over the future life of the landfill? How can a collection system be designed, without knowing the anticipated production levels which it will be designed to handle?"

EPA Response: We are not aware of any calculations being made of the anticipated levels of methane and other gas production, and production of volatile organics, over the future life of the landfill. The gas collection system was designed to prevent the gas in the landfill from migrating to the Riverside Gardens area. Gas production levels were not directly utilized in the design of the system.

EPA Clarification: Concentrations of contaminants are not necessary to design a collection system but could impact a treatment system if one were necessary.

50.0 "Has any testing been conducted by EPA to determine the nature and threat from the 11 unidentified organics that were detected by IT Corporation in the assessment of the gas collection system? What are the constituent toxics being collected and emitted into the community from the gas collections system?"

EPA Response: EPA is currently conducting an air study at and in the vicinity of the site. In this investigation target and non-target compounds are being identified. Target compounds identified in the parts per billion range were vinyl chloride, benzene, toluene, ethylbenzene, and xylene.

EPA Clarification: Concentrations of contaminants are not necessary to design a collection system but could impact a treatment system if one were necessary.

51.0 "The county gas collection system apparently did not include the designed gas burner. What stack monitoring has and will be conducted to determine the organics content of the gas which is now being collected, concentrated and emitted into the vicinity of the Riverside Gardens neighborhood"? What ambient monitoring is being conducted on a continuing basis (rather than on one dry-weather day) to determine the ambient levels of gases in the neighborhood?"

EPA Response: EPA is currently conducting an air study at and in the vicinity of the site. Representative samples are being collected over varied times and climatic conditions. Stack, background, indoor and outdoor samples are being collected.

EPA Clairfication: The air monitoring system proposed in the Feasibility Study includes six sampling stations on the landfill that would be monitored three times a year. This program may be altered as a result of the air sampling currently being conducted by EPA.

52.0 "What testing has been conducted at the Putman Avenue sites where the high concentrations of methane and organic-laden gases were first detected in 1975 in order to determine whether the county gas collection system is functioning so as to control gas migration? What testing will be conducted to determine the current degree of gas migration?"

EPA Response: Two residences on Putman Avenue have been selected as target areas for sampling during the current air investigation being conducted by EPA.

EPA Clarification: The Feasibility Study includes the installation of four gas monitoring wells between the landfill and Riverside Gardens. In addition, one well will also be located on Putman Avenue.

53.0 "What follow-up drilling will be conducted on-site to determine actual depth of stored waste?"

EPA Response: At this point in the investigation, there is no follow-up drilling planned on-site. The actual depth of the stored waste will be a major factor only if excavation is chosen as an alternative. Due to the health risks associated with drilling through the fill it is not being considered at this time. resources.

54.0 "EPA tested for chemicals in these homes; they failed to test for methane. We would like to know why this happened. If we are sitting on top of methane, then our homes ought to be tested for it."

EPA Response: The combustible gas unit will be utilized in the future air investigations. In the January '86 air sampling investigation homes were tested for methane using the combustible gas unit. Methane was not detected in any of the homes.

I should also emphasize that methane is an asphyxiant gas, not one of the hazardous substances that are addressed by EPA. Therefore, EPA has focused primarily on the toxic gases that may be mixed with the methane gas.

55.0 "I am wondering why Hofgesang can't be made responsible for landfill."

EPA Response: The Hofgesang Foundation has been named as one of the Potentially Responsible Parties. As such, they will be given an opporutunity to participate in the clean-up remedy. If they choose not to participate, the Agency may seek other legal recourses.

56.0 "Should a burner be installed in the gas collection and venting system?"

EPA Response: At this point into the project we can not make a determination on whether a burner is needed. After sufficient air data is collected and reviewed, EPA will evaluate the need for a gas collection system burner. However, for cost purposes in the FS, a burner was included in the remedial alternatives.

57.0 "The once per quarter monitoring proposed in this and all alternatives is totally inadequate."

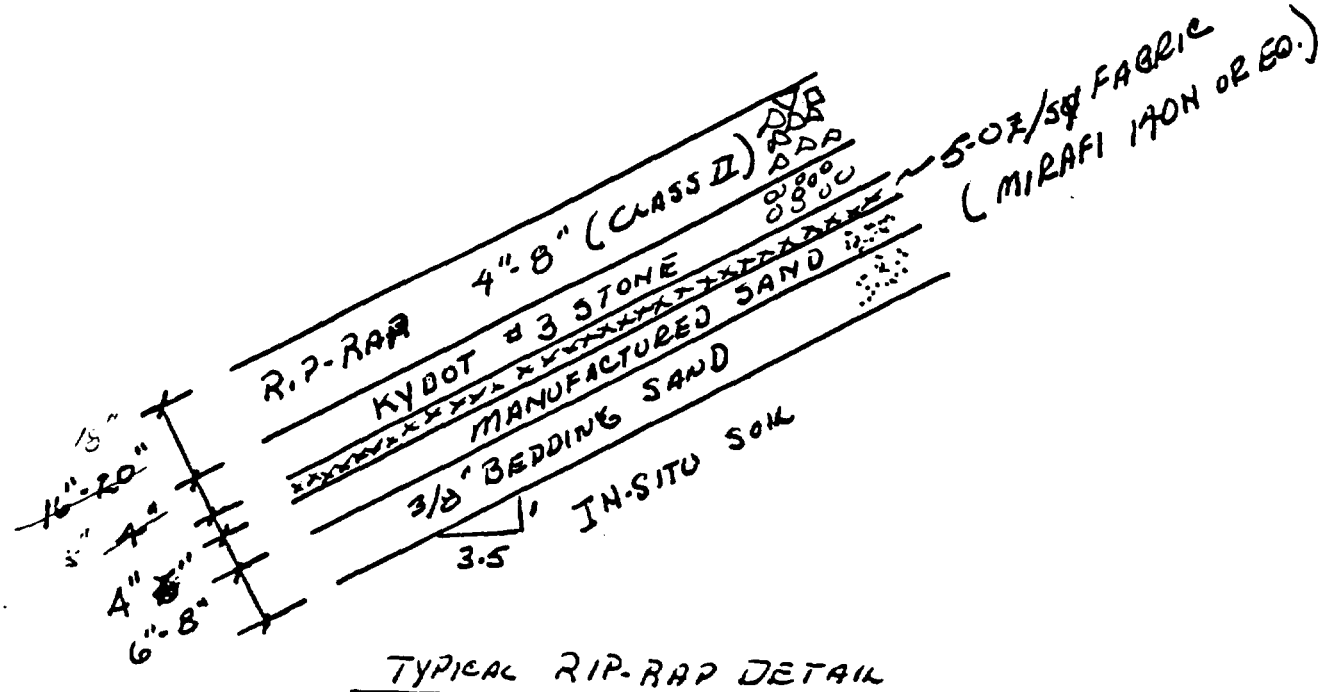
EPA Response: The decision to monitor quarterly was based on the following factors: (1) the number of receptors to groundwater, (2) the groundwater flow rate and (3) cost factors. Also, RCRA compliance status requires four quarters of groundwater data to determine baseline groundwater conditions.

SECTION VI

Ebasco Services Incorporated Remedial Report

LEE'S LANE LANDFILL
EPA
R.P. RAP SLOPE DESIGN

EBASCO SERVICES
REVIEW BY
[illegible]
DATE JUNE 24, 1987



TYPICAL RIP-RAP DETAIL

LEE'S LANE LANDFILL

EPA

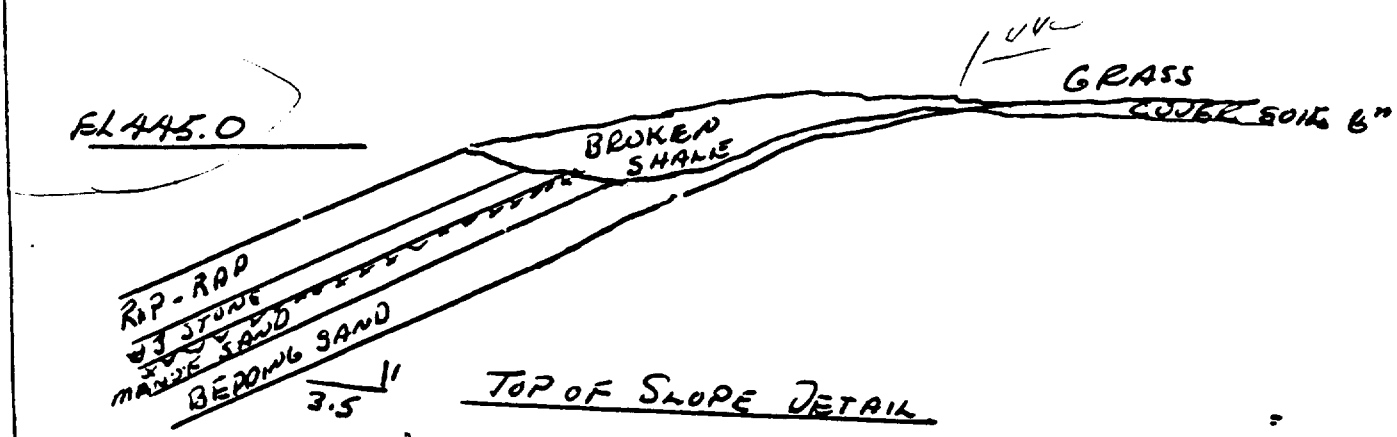
R.P-RAP SLOPE DESIGN

EBASCO SERVICES

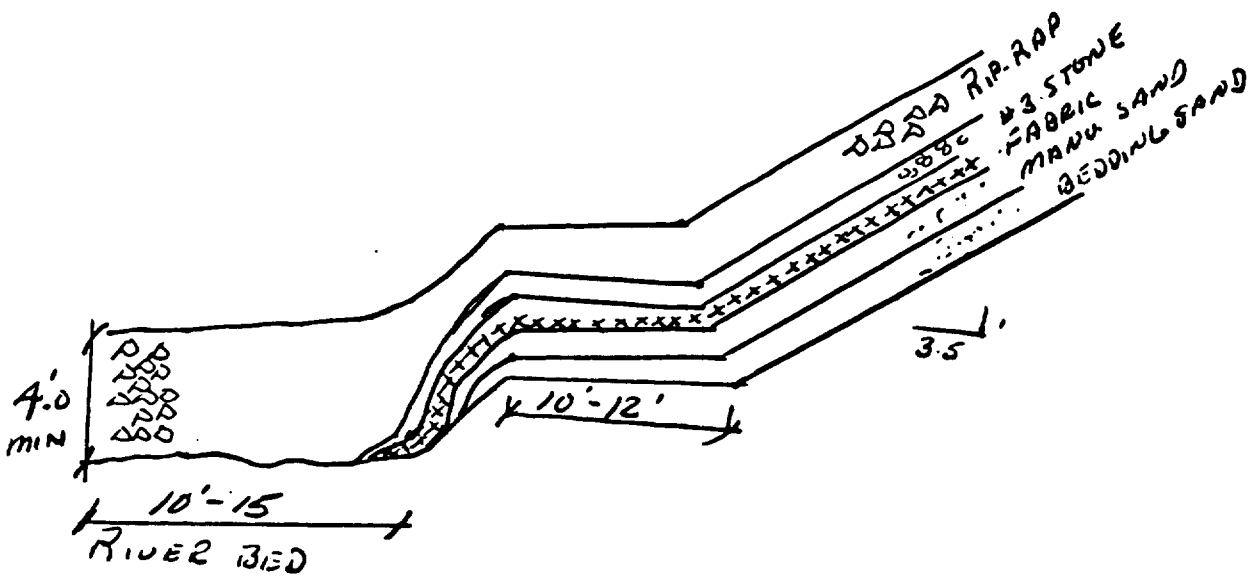
DESIGN BY: R. HOWARD

REVIEW BY

DATE JUNE 24, 1987



TOP OF SLOPE DETAIL



TOE OF SLOPE DETAIL

SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR REM III HAZARDOUS WASTE SITE ACTIVITIES

SITE: LEE'S LANE LANDFILL CONSTRUCTION ACTIVITIES

LOCATION: JEFFERSON COUNTY, KY.

DATE PREPARED: MAY 1987

PREPARED BY: M. BILELLO/A. O'REAR/EBASCO
(NAME/COMPANY)

PLANNED SITE ACTIVITY DATES: JUNE 1987

REVISION: 1

EBASCO SERVICES INCORPORATED, EBASCO SUBCONTRACTORS AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE HAZARDOUS NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION BY TRAINED HEALTH AND SAFETY SPECIALISTS.

List of Figures

SECTION I: GENERAL

This plan has been prepared in conformance to REM III Program Guideline HS-1.01. It addresses all those activities associated with Remedial Construction Oversite at the Lees Lane Landfill and will be implemented by the Site Engineer during site work. Compliance with this HASP is required of all Ebasco and REM III persons who enter this site. Assistance in implementing this Plan can be obtained from the REM III Health and Safety Manager (HSM), and/or the Ebasco Company Health and Safety Supervisor (CHSS). The content of this HASP may change or undergo revision based upon additional information made available to health and safety (H&S) personnel, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by H&S staff and are subject to approval of the Ebasco CHSS, and the HSM.

SITE: Lee's Lane Landfill SITE NO. 4236.721

PLAN DATE: June 1987

SCOPE OF WORK: Oversite of Remedial Construction

	SITE MANAGER	HEALTH AND SAFETY OFFICER
NAME:	A. O'Rear	M. Bilello
WORK PHONE:	404-662-2207	404-662-2382

EMERGENCY PHONE NUMBERS

	Police Dept.	911
	Fire Dept.	911
	Rescue Service	911
Memorial Hospital	Hospital	502-562-2119
University	Back-up Hospital	502-562-3000
	National Response Center	(800) 424-8802
	Poison Control Center	(800) 822-9761
B. Groves	CHSS	(201) 460-6255
M. Szomjassy	REM III Regional Manager	(404) 662-2378
C. Swan	Field Operations Leader	(919) 855-7500
	REM III HSM (G. Smith or J. Janous)	(703) 558-7506
	Community Relations Coordinator	
	Offsite Emergency Services	
	Site Command Post	None

TELEPHONE ACCESS:

The nearest public phone will be used to summon emergency assistance/services. The nearest public phone is located at Woolsey's Market, 4000 Lee's Lane.

INTERPRETATION OF HEALTH AND SAFETY PLAN

Other on-site personnel, in addition to the emergency contractor will include EPA's Remedial Project Manager (RPM) and Emergency's On-Site Coordinator (OSC). The EPA OSC will have primary responsibility as Health and Safety Coordinator for EPA and the emergency contractor. In case of a difference of opinion in interpretation of this HASP between the Ebasco Site Engineer and EPA Health and Safety Coordinator, work shall cease and all parties shall move out of the contaminated area to resolve their differences in interpretation. Work may start again upon resolution of the opinion differences.

SECTION II: HEALTH AND SAFETY PERSONNEL

2.0 Health and Safety Personnel Designations

The following briefly describes the health and safety designations and general responsibilities which may be employed for the Lee's Lane Site.

2.1 Company Health and Safety Supervisor

The CHSS has overall responsibility for development and implementation of this HASP. He also shall approve any changes to this plan due to modification of procedures or newly proposed site activities.

The CHSS will be responsible for the development of new company safety protocols and procedures necessary for field operations and will also be responsible for the resolution of any outstanding safety issues which arise during the conduct of site work. Health and safety-related duties and responsibilities will be assigned only to qualified individuals by the Ebasco CHSS. Before personnel may work on site, currentness of acceptable medical examination and acceptability of health and safety training must be approved by the CHSS.

2.2 Site Health and Safety Officer

The HSO will be present onsite during the conduct of all level A, or B, or high-hazard level C field operations and will be responsible for all health and safety activities and the delegation of duties to the H&S staff in the field. Where the site is identified as low-hazard level C or level D, the HSO may direct the site health and safety efforts through an assistant health and safety officer approved by the CHSS. The assistant will be responsible for implementation of the HASP. He may direct or participate in downrange activities as appropriate when this does not interfere with his primary HSO responsibility. The HSO has stop-work authorization which he will execute upon his determination of an imminent safety hazard, emergency situation, or other potentially dangerous situations, such as detrimental weather conditions. Authorization to proceed with work will be issued by the CHSS after such action. The HSO will initiate and execute all contact with support facilities and personnel when this action is appropriate.

2.3 Assistant Health and Safety Officer

An Assistant HSO may be designated. On low-hazard level C or level D site he may have collateral duties but must be qualified for the health and safety responsibility by the CHSS. At level A, B or high-hazard level C sites, he will be the down range person who accompanies field sampling teams and will report to the HSO. Additionally, he may be required to support the HSO when multiple operations are conducted that require monitoring and HSO surveillance. His primary responsibility is to provide the appropriate monitoring to ensure the safe conduct of field operations. The number of Assistant HSO's will be dependent upon the number of downrange operations occurring simultaneously, site level of protection designation, and the individual assignments made by the HSO. The Assistant HSO will also share responsibility with the HSO for ensuring that all safety practices are utilized by downrange teams and that during emergency situations appropriate procedures are immediately and effectively initiated. He will also be responsible for the control of specific field operations and all related activities such as personnel decontamination, monitoring of worker heat or cold stress, distribution of safety equipment, and conformance with all other procedures established by the HASP.

2.4 Company Health and Safety Supervisor (CHSS)

The CHSS has overall responsibility to insure that an adequate HASP has been developed for all REM III sites assigned to his company. The CHSS will have review and approval authority over each site-specific HASP, and also may audit field compliance with the HASP to assure consistency with his company H&S policy. He may also be requested by the HSM to perform H&S field audits. In the event H&S issues arise during site operatons, the CHSS will attempt to resolve these if possible. If issues are not immediately resoluble the CHSS shall immediately seek intervention of the HSM who shall have final H&S authority for issue resolution.

SECTION III: SITE HISTORY AND PHYSICAL DESCRIPTION

3.0 Location

The Lees Lane Landfill Site is located approximately 4 miles southwest of Louisville, Kentucky. The site is adjacent to 5000 feet of the Ohio River in Jefferson County.

3.1 Description

The Lee's Lane Landfill Site is composed of three tracts, measuring approximately 5000 feet in length and 1500 feet in width. The site is approximately 112 acres in size with well vegetated sloping terrain in the north and central tracts, the southern tract has steeper slopes and two depression resulting from remaining landfill capacity when the landfill operations ceased.

The site is bordered by a flood protection levee on the east and south. Borden Chemical borders the site to the northeast and to the south is the Louisville Gas and Electric, Cane Run Plant Generating Station. A residential area, Riverside Garden with about 300 homes is located east of the site.

Site access is currently unrestricted to pedestrial traffic, and the site is still used for recreation purposes such as hunting, fishing, and dog walking.

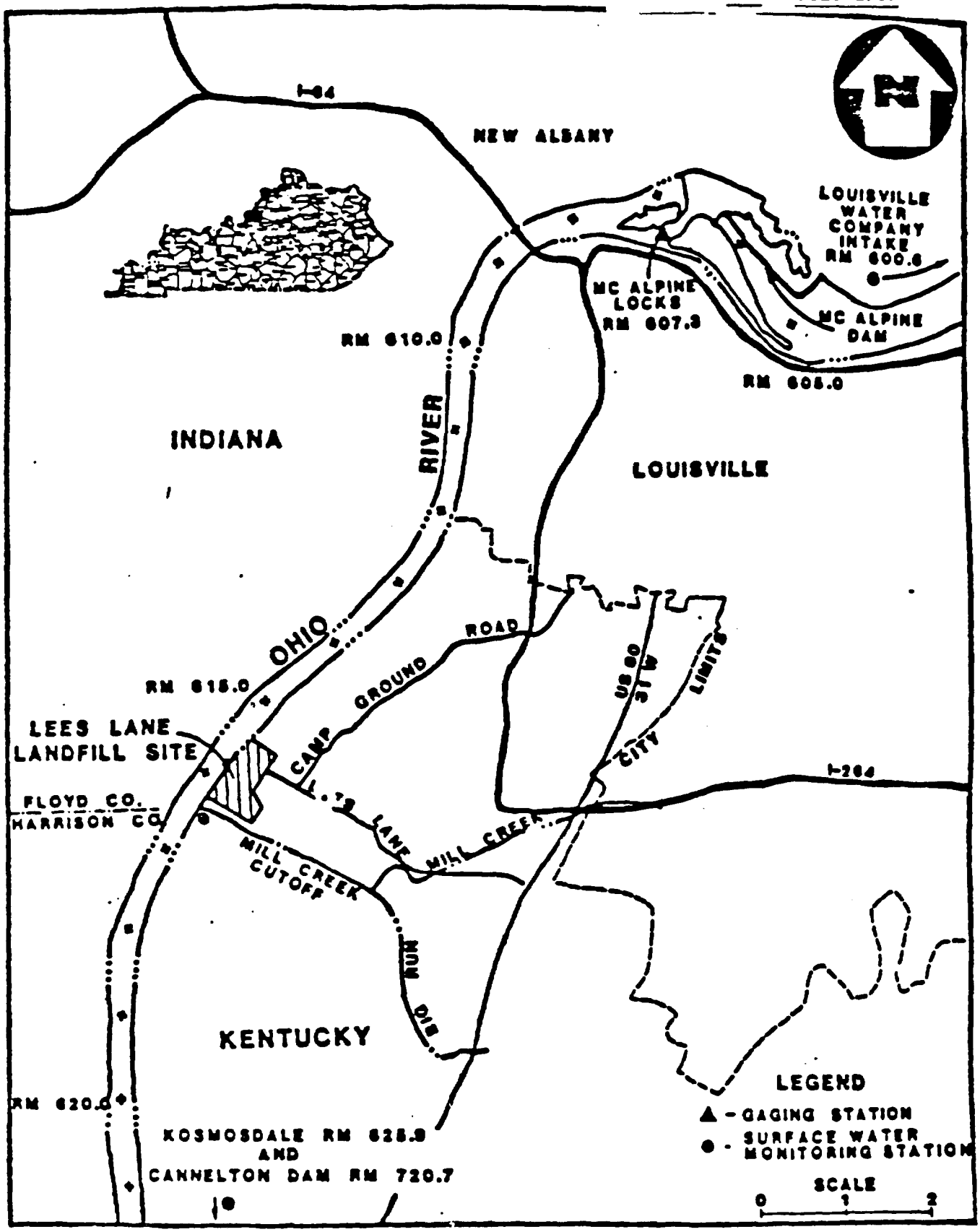
3.3 History

The actual date that operations commenced and Lees Lane is not known, but quarrying began at least as early as the 1940's. Landfilling is also reported to have begun in the late 1940's. Open dumping and landfilling of sand and gravel pits was conducted until the 1960's, when land filling was confined to the sand and gravel pits.

In 1971 the state of Kentucky permitted the Southern Tract under its Solid Waste Program. The permit was not renewed in November of 1974, due to repeated compliance violations.

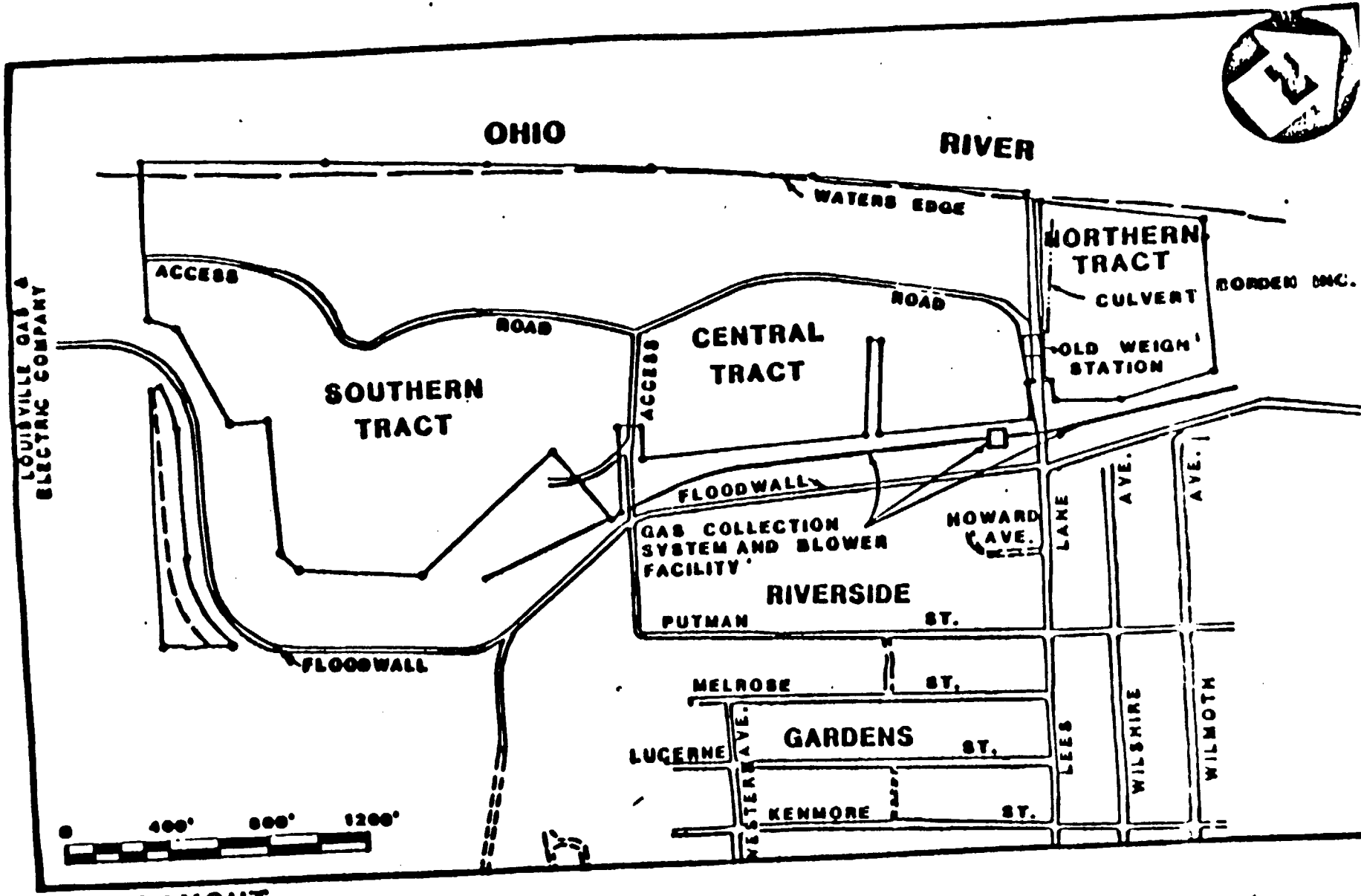
During 1975 a methane gas problem was identified and explosive levels of menthane gas were identified in seven homes in Riverside Gardens, the homes were purchased and the families relocated. Further studies resulted in the installation of a gas collection system in 1980.

In February 1980, 400 drums were discovered near the bank of the Ohio River. Forty of the drums contained hazardous material and were transported off site. Numerous other studies including a remedial investigation (NUS 1986) have been conducted at the site resulting in the installation of ground water monitoring wells .



REGIONAL MAP
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

Figure 1
Source: Final RI/FS
Study of Alternatives
Lee's Lane Landfill Site
April 1986



SITE LAYOUT
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

Figure 2

Source: Final RI/FS
Study of Alternatives
Lee's Lane Landfill Site
April 1986

SECTION IV. SITE RELATED INCIDENTS, ACTIONS COMPLAINTS

4.0 General

Below is a review of some of the incidents, actions, or spills that have occurred at the site. This information reflects only the information selected for incorporation in this HASP.

4.1 Gas Collection System

The problem of methane gas migrating off-site was first identified in 1975. Explosive levels of methane and flash fires in the basements of homes in Riverside Gardens resulted in the relocation of seven families, several studies and the installation of a gas collection system in 1980.

4.2 Drums on Site

In 1980, 400 drums were inventoried on site, 300 drums were found to be empty, 60 were identified as containing non-hazardous material, the remaining 40 drums were identified as containing hazardous materials. The 40 hazardous drums were transported offsite, the remaining drums were disposed of onsite. Five of the forty drums classified as hazardous were randomly selected for analysis. The analysis indicated the presence of 51 organic compounds, and high concentration of copper, cadmium, nickel, lead and chromium. Among the organic compounds identified were benzene, phenols and their ethylated derivatives.

During a recent site visit (April 1987) numerous drums, all in poor condition, were identified on site along bank of the Ohio River.

SECTION V: WASTE DESCRIPTION

5.0 General

Municipal, domestic, and industrial wastes were disposed of at the Lees Lane Landfill. As was the practive at time of disposal the wastes were comingled during landfilling.

5.1 Waste Types

Four Companies are known to dispose of industrial waste at the Lees Lane Land Fill. Table 1 summarizes the wastes disposed and location of disposal. In addition methane gas and other organic compounds resulting from the decomposing fill are being produced at the site.

5.2 Waste Types:	Liquid	X	Sludge	
	Solid	X	Gas	X
	Semi-Solid			
5.3 Characteristics:	Corrosive	X	Inert	X
	Flammable	X	Radioactive	
	Reactive	X	Volatile	X
	Toxic	X	Other	
5.4 Containment:	Drum	X	Lagoon	
	Tank		Lake	
	Vat		Stream & Lake Sediments	
	Pipe			

TABLE 1

HAZARDOUS WASTES REPORTED TO BE DISPOSED OF IN LEES LANE LANDFILL

Company	Dates Used	Disposal Areas	Hundred Tons	Type of Waste
The B. F. Goodrich Company - Chemical Group	1968-1971	North Site	1,514	Zinc, cadmium, copper, chromium (trivalent) lead, halogenated aliphatics, acrylates and latex emulsions, plastizers, resins, elastomers.
	1972-1976	South Site	175	
The Harshwaw Chemical Company - A Division of Gulf Oil Corp.	1950-1967	Lees Lane Landing Landfill	1	Arsenic, selenium, antimony, iron, manganese, magnesium, zinc, cadmium, copper, chromium (trivalent and hexavalent), lead, insecticides, amides, amines, imides, resins, salts, miscellaneous paints and pigments.
Rohm & Hass Company - Louisville Plant	1962-1970	West End-Lees Lane	343	Amides, amines, imides, plastizers, resins, salts, acid solutions (with pH less than 3).
Celanese Corporation - Celanese Polymer Special. Co.	1967-1974	Lees Lane Sanitary Landfill	91	Acid solutions (pH less than 3), arsenic, selenium, antimony, mercury, iron, manganese, magnesium, zinc, cadmium, copper, chromium (trivalent and hexavalent), lead, halogenated aliphatics, amides, amines, imides, resins, polar and non-polar solvents, oils and oil sludges, esters, and ethers, alcohols, ketones and aldehydes, salts, miscellaneous paints and pigments, asbestos, wastes with flash point below 100o F.

Source: Eckhardt, 1979.

SECTION VI: HAZARD ASSESSMENT

The major toxic contaminants found in the soil at Lees Lane Landfill are arsenic, lead, and chromium. In addition, trace amounts of polynuclear aromatic hydrocarbons (PAH) were found in surface soil samples. The routes of exposure from these contaminants are inhalation of suspended particles, dermal absorption, and oral ingestion.

The likelihood of dermal absorption of these toxic compounds is low because of the low skin absorption rate of metal cations and salts and the low concentrations of PAH compounds in the soil. However, direct skin contact with soil or waste should be avoided. The proper use of personnel protection and decontamination procedures should adequately handle direct skin contact.

Exposure of personnel through oral ingestion to site contaminants can be adequately handled through contaminant avoidance such as good safety practices as no eating, drinking, or smoking on site.

Inhalation exposure to these contaminants by dust control and avoidance of working during dusty conditions.

SECTION VII: TRAINING

7.0 Basic Training Required

Completion of the REM III Fundamental Health and Safety Training or the approved equivalent is required for all employees who will perform work in areas where the potential for a toxic exposure exists. Typically these areas have been designated as exclusion zones: Training or training and site experience must also comform to the requirements of 29 CFR 1910.120.

7.1 Advanced Training

Advanced Training as necessary will be provided to any personnel who will be expected to perform site work utilizing Level A protection or other specialized operation to be undertaken at a site. An Emergency Response Team shall be formed and trained to carry out Level A work.

7.2 Site-Specific Training

Training will be provided that will specifically address the activities, procedures, monitoring, and equipment for the site operations. It will include site and facility layout, hazards, and emergency services at the site, and will detail all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

7.3 Safety Briefings

Project personnel will be given briefings by the HSO or Assistant HSO on a daily or as needed basis to further assist site personnel in conducting their activities safely. It will be provided when new operations are to be conducted, changes in work practices must be implemented due to new information made available, or if site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices when performance deficiencies are identified during routine daily activities or as a result of safety audits.

7.4 First Aid and CPR

The CHSS will identify those individuals requiring this training in order to ensure emergency treatment is available at field activities. It is expected that the selected number of field workers will have First Aid training and several members of the field team will have CPR training. These courses will be consistent with the requirements of the American Red Cross Association.

SECTION VIII: ZONES, PROTECTION, AND COMMUNICATION

8.1 SITE ZONES

The area of primary operations will be along a one mile section of the Ohio River Bank. Due to the limited access from the river bank to a suitable area for decontamination the river bank will be considered the contamination reduction corridor. A centralized area will be established for personnel and portable equipment decontamination. Due to the work being conducted over such a large area the exclusion zone will be extended from the contamination reduction corridor to the test pit location.

The contamination reduction zone (CRZ) will contain the necessary materials for personnel and portable equipment contamination. Also located in the CRZ will be safety equipment such as emergency eyewash fire extinguishers, stretcher, first aid and other appropriate equipment.

8.2 PERSONAL PROTECTION

8.2.1 General

The level of protection to be worn by field personnel will be defined and controlled by the HSO with approval of the CHSS. Basic levels of protection for general operations are outlined in the REM III Personal Protection Guidelines HS-2. Where more than one hazard area is indicated, further definition shall be provided by review of site hazards, conditions, and proposed operational requirements and by monitoring at the particular operation being conducted. Protection may be upgraded or downgraded, as appropriate, only after the HSO receives authorization from the Ebasco CHSS.

Task	Level of Protection
H&S Reconnaissance	D
Sampling Reconnaisance	D/C
Surveying Operations	D
Soil Sampling	D/C
Decontamination (CRC)	D
Decontamination of Sampling Equipment	D/C
General Clean Area Work	D

Monitoring will be performed by the HSO to determine the level of protection for those operations listed above that have more than one level of protection indicated.

8.2.2 Initial Levels Of Protection

Initial levels of protection will be employed during the performance of the Initial Reconnaissance. The recon team is anticipated to consist of a minimum number of personnel. The HSO, the Site Manager, or Site Project Engineer, and other appropriate support personnel may be required. The team will enter hazardous areas in conservatively-specified protection with appropriate monitoring equipment. The Initial Reconnaissance will allow for the selection of appropriate protection levels for planned operations, decontamination procedures, site layout, sampling strategies, and general safety planning. It should be noted that this HASP allows for upgrading or downgrading of protection levels to conservatively preclude any potential for contamination while not sacrificing protection or efficiency. During the Initial Reconnaissance, the team will perform various monitoring techniques to identify the presence of contaminants as well as assessing the integrity of the site in consideration of safety for the proposed site investigation, sampling, or construction operations.

The following generically describes the equipment that comprises the various levels of protection indicated in Section 8.2.1. For specific site conditions or work tasks modifications or alterations for each of these levels may be necessary. These minor changes will be implemented by the H&S Officer as necessary.

For Tasks requiring Level C Protection or in the event of upgrading:

- Full face air-purifying respirator with appropriate cartridge;
- Emergency escape respirator (carried when appropriate);
- Chemical protective suit (e.g., polycoated TYVEK);
- Gloves, inner (surgical type);
- Gloves, outer (chemical protective);
- Boots (chemical protective), steel toe;
- Booties, (optional);
- Hard hat; and
- 2-way radio (intrinsically safe).

For Tasks requiring Level D Protection:

- Air purifying or emergency escape respirator (available);
- Coveralls;
- Gloves (chemical resistant);
- Boots/shoes (safety/chemical protective)
- Hard hat with eye protection.

8.2.3 Safety Equipment

Basic emergency and first aid equipment will be available at the Support Zone and/or the CRC, as appropriate. This shall include HASP-specified communications, first aid kit, emergency eyewash fire extinguishers, and

other safety-related equipment. Safety equipment will be located at the site of specific operations, as appropriate.

8.3 COMMUNICATIONS

- Telephones - The nearest public phone is located in Woolsey's Market (4000 Lees Lane).

- Air Horns - These will be carried by downrange field teams and also will be maintained at the Support Zone for announcing emergency evacuation procedures (see Section XIV) and backup for other forms of communications.

- Hand signals - To be employed by downrange field teams along with utilizing the buddy system. These signals are also very important when working with heavy equipment. They shall be known by the entire field team before operations commence and covered during site-specific training.

SECTION IX: MONITORING PROCEDURES

9.1 MONITORING DURING SITE OPERATIONS

9.1.1 Excavation Operations - Monitoring will be performed continuously during all excavation. A Photo Ionization Detector (PID) and/or Flame Ionization Detector (FID) will be utilized to monitor the breathing zone, the excavated area and any material taken from an excavation. Any breathing zone measurement of organic vapors greater than 0.2 ppm above background will initiate the use of Level C personal protective equipment (PPE). Measurements of 5 ppm above background or greater will necessitate evacuation of the exclusion zone. The open excavation will be monitored by the H&S Officer or designee to establish the level of organic vapors present which could be potentially transported downwind to unprotected on-site and off-site personnel. Excavated materials should also be monitored to determine if they are a source of a respirable hazard. Monitoring with a Combustible Gas Indicator (CGI) will be performed to determine the potential for build up of a combustible environment within the excavation. Readings equal to or greater than 10% of the Lower Explosive Limit (LEL) require continuous monitoring; readings greater than 25% of the Lower Explosive Limit (LEL) require that operations stop and evacuation procedures be initiated.

If at anytime the levels of organic vapors outside of the exclusion zone exceed 0.2 ppm above background then several options must be considered. One option is the expansion of the Exclusion Zone. If public health would be endangered by the expansion of the Exclusion Zone then the test pit must be covered or filled in immediately.

9.2 MEDICAL SURVEILLANCE PROCEDURES

All REM III personnel and REM III subcontractors who will be performing field work at the Lee's Lane Landfill Site will be required to have passed a REM III's medical surveillance examination or equivalent. A release for work will be confirmed by the Ebasco CHSS before an employee can begin hazardous activities. The exam will be taken annually at a minimum and upon termination of REM III work. Additional medical testing may be required by the Ebasco CHSS in consultation with the company physician and the HSO if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

SECTION X: SAFETY CONSIDERATIONS FOR SITE OPERATIONS

10.1 General

All field sampling will be performed under the level of protection described in Section VII, and instituted by the Health and Safety Officer. The level of protection will be established by review of facility history, available data, and especially by the results of the Health and Safety Reconnaissance and other monitoring performed for each operation.

10.2 Health and Safety Reconnaissance

Safety considerations during the H&S Reconnaissance or reconnaissance of any new areas are important since these activities will precede all other field operations. Reconnaissance will be conducted under Level D in those areas identified by the H&S Officer, provided there is sufficient support information to justify Level D protection. Where direct reading instruments (i.e., PID and/or FID) indicate greater than 0.2 ppm above background (non-methane reading), Level C protection will be utilized. The team will maintain line of sight with each other at all times and maintain communications. Monitoring will be performed as indicated in Section IX and will be used to alert the recon team if a dangerous situation exists. The monitoring will also assist in prescribing levels of protection for future site operations, designating site layout and identifying areas of particular hazards, if any.

10.3.0 Field Operations

During construction activities on the Ebasco Engineer will conduct health and safety monitoring in accordance with Section 9.11 of this HASP. This monitoring will be conducted for use by Ebasco personnel on site.

SECTION XI: DECONTAMINATION PROCEDURES

11.1 Personnel and Equipment Decontamination Procedures

All personnel and equipment used down range shall upon exiting the Exclusion Zone be subject to a thorough decontamination process. All boots and gloves will be deconned using soap and water solution and scrub brushes. When level C protection is employed, the protective suit will be subject to a gross wash and rinse using a spray applied soap and water solution or simple removal and disposal.

All used respiratory protective equipment will be deconned daily and sanitized with MSA Sanitizer II.

SECTION XII: ADDITIONAL SAFE WORK PRACTICES

Refer to H&S Officer for specific concerns for each individual site task. Do not climb over/under drums, or other obstacles and always employ buddy system. Practice contamination avoidance, on and off-site. Also, due to the unknown nature of waste placement at the site, extreme caution should be practiced during excavation operations. Render immediate first aid to any and all cuts, scratches, abrasions, etc. Be alert to your own physical condition and watch your buddy for signs of fatigue, exposure, etc. A work/rest regime will be initiated when ambient temperatures and protective clothing create a potential heat stress situation. No work will be conducted without adequate natural light nor without appropriate supervision. Task safety briefings will be held prior to onset of task work.

SECTION XIII: DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects will be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard or causing litter to be left onsite. All potentially contaminated materials, e.g., TYVEK suits, gloves, etc., will be bagged or drummed as necessary and segregated for future disposal. All contaminated waste materials will be disposed of in accordance with all applicable regulations. All non-contaminated materials will be collected and bagged for appropriate disposal as normal domestic waste.

SECTION XIV: EMERGENCY PLAN

14.1 Personnel Injury

Emergency first aid shall be applied onsite as deemed necessary. Then, decontaminate and transport the individual to nearest medical facility if needed. The HSO will supply medical data sheets to appropriate medical personnel and complete the incident report designated in HS-1.12.

Hospital - Memorial Hospital (502) 562-2119
Rescue - 911

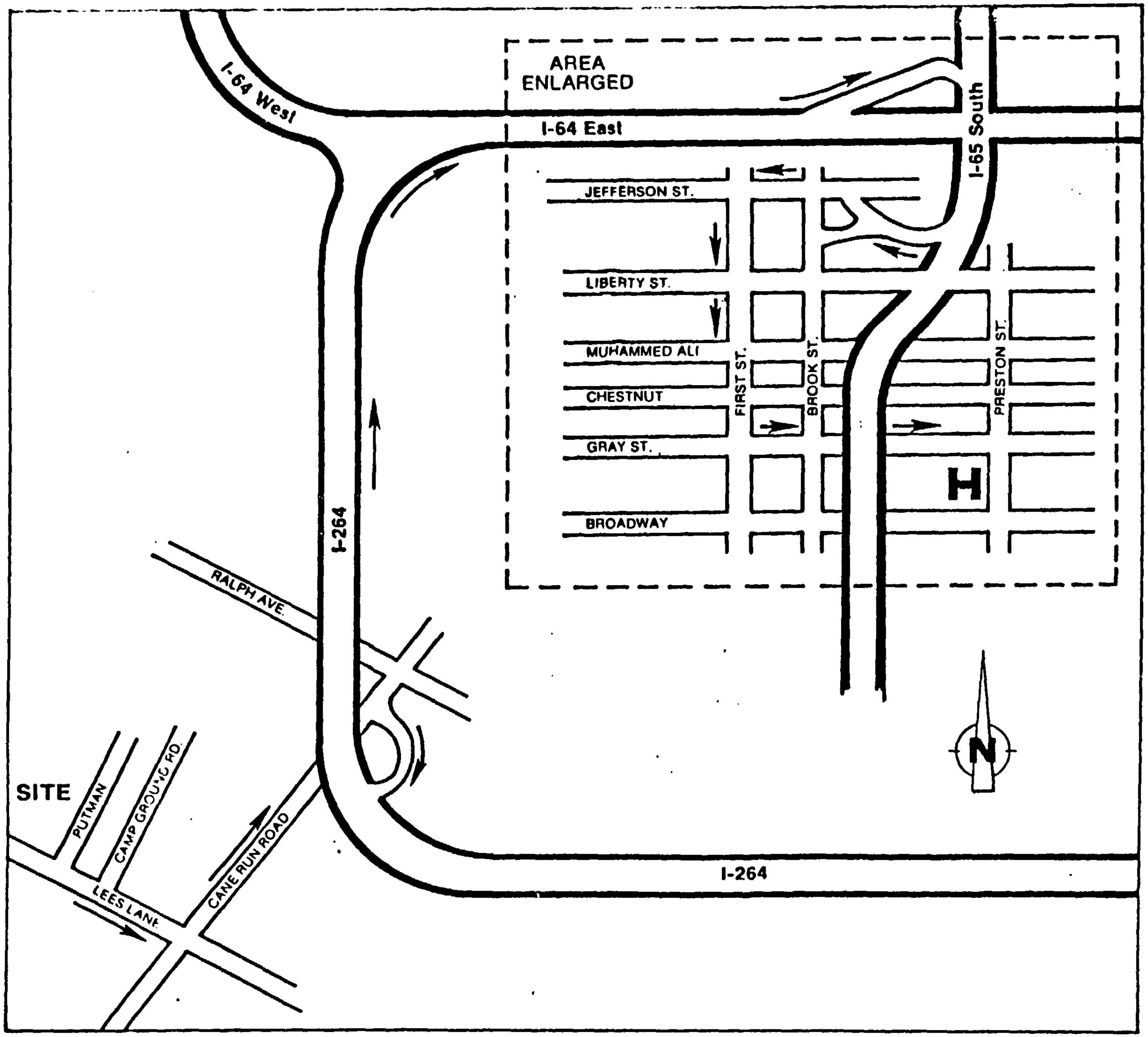
The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. However, since some situations may require transport of an injured party by other means, a hospital route must be firmly identified. During the initial reconnaissance a primary hospital and back-up facility shall be located and route located to and from site with details of the route delineated. The hospital route location map on the following page will be conspicuously posted on site.

Primary Hospital Route:

1) From site take Lees Lane to Cane Run Road
2) Turn left onto Cane Run Road North
3) Take Cane Run Road to I-264 West
4) From I-264 Take I-64 East
5) Exit I-64 East to Jefferson Street Exit
6) From Jefferson Steet Turn Left Onto First Street
7) The Left Onto Gray Street
8) Emergency Room is Two Blocks Down Gray Street

Backup Hospital Route: University Hospital Phone (502) 562-3000

1) Exist site onto Lees Lane
2) Take Lees Lane to US 60 North
3) From US 60 take I-264 East
4) Exit I-264 East to 65 North
5) Exit 65 North at Broadway Exit
6) At Broadway Exit cross Broadway onto 2nd Street
7) At First Street turn right onto Chestnut Street
8) The Hospital is located on Chestnut Street between Jackson and Hancock



DIRECTIONS

ROUTE TO:
METHODIST HOSPITAL

FROM:
LEE'S LANE LANDFILL

- From site take Lee's Lane to Cane Run Road
- Turn LEFT on Cane Run Road (North)
- From Cane Run Road take I-264 WEST to I-64 EAST
- Exit I-64 WEST at the Jefferson St. exit
- Take Jefferson St. to First St.
- Turn LEFT onto First St.
- Then LEFT onto Gray St.
- Emergency room is two blocks down Gray St.

Figure 3
Primary Hospital Route Map

14.2 Overt Personnel Exposure

Include generic first aid procedures in this section. Typical response includes:

SKIN CONTACT: Use copious amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention. Eyewash and emergency shower or drench system will be provided onsite at the CRZ and/or Support Zone as appropriate. Eyes should be rinsed for 15 minutes upon chemical contamination.

INHALATION: Move to fresh air and/or, if necessary decon/transport to hospital.

INGESTION: Decontamination and transport to emergency medical facility

PUNCTURE WOUND OR LACERATION: Decontaminate and transport to emergency medical facility. HSO will provide medical data sheets to medical personnel as requested (see Section XVI)..

Hospital - Memorial Hospital (502) 562-2199
Rescue - 911

14.3 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold related injuries
- Treacherous weather-related working conditions
- Limited visibility
- Potential for electrical storms

SECTION XV: AUTHORIZATIONS

Personnel authorized to enter the Lees Lane Landfill Site while operations are being conducted must be certified by the Ebasco CHSS. Authorization will involve completion of appropriate training courses and medical examination requirements as required by OSHA 29 CFR 1910.10 and review and sign-off of this HASP. All personnel must utilize the buddy system or trained escort, and check in with the Field Team Leader at the Command Post.

1. Personnel Authorized to Perform Work Onsite:

1.	Mike Bilello	11.	
2.	Al O'Rear	12.	
3.	Sam Mason	13	
4.	Colette Botts	14.	
5.	Cal Swan	15.	
6.	Bob Howard	16.	
7.		17.	
8.		18.	
9.		19.	
10.		20.	

2. Other Personnel Authorized to Enter Site:

1.	ZPMO Personnel	6.	Bruce Groves
2.	REM III Regional Personnel	7.	
3.	EPA Personnel	8.	
4.	State Environmental Personnel	9.	
5.	Police, Fire, Emergency Personnel	10.	

SECTION XVI: MEDICAL DATA SHEET

This brief Medical Data Sheet will be completed by all onsite personnel and will be kept in the Command Post during the conduct of site operations. Completion is required in addition to compliance with the Medical Surveillance Program requirements described in the REM III Program Health and Safety Plan. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project Lee's Lane Landfill

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next of Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses or Exposures to Hazardous Chemicals _____

_____

_____

What medications are you presently using? _____

_____

_____

Do you have any medical restrictions? _____

_____

Name, Address, and phone number of personal physician: _____

_____

_____

_____

_____

SECTION XVII: FIELD TEAM REVIEW

Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provisions contained therein.

Site/Project: Lee's Lane Landfill

Name Printed	Signature	Date

SECTION XVIII: APPROVALS

By their signature the undersigned certify that this HASP is approved and will be utilized at the Lees Lane Landfill site.

Health and Safety Officer Michael A. Bilello	Date
Site Manager Al O'Rear	Date
Company Health and Safety Supervisor Steven Schaffer	Date
Regional Manager, REM III Region IV Mike Szomjassy	Date
REM III Health and Safety Manager John Janous	Date

SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR REM III HAZARDOUS WASTE SITE ACTIVITIES

SITE: LEE'S LANE LANDFILL

LOCATION: JEFFERSON COUNTY, KY.

DATE PREPARED: MAY 1987

PREPARED BY: M. BILELLO/A. O'REAR/EBASCO
(NAME/COMPANY)

PLANNED SITE ACTIVITY DATES: MAY 1987

REVISION: 1

EBASCO SERVICES INCORPORATED, EBASCO SUBCONTRACTORS AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE HAZARDOUS NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION BY TRAINED HEALTH AND SAFETY SPECIALISTS.

List of Figures

SECTION I: GENERAL

This plan has been prepared in conformance to REM III Program Guideline HS-1.01. It addresses all those activities associated with Test Pit Excavation and Sampling at the Lees Lane Landfill and will be implemented by the HSO during site work. Compliance with this HASP is required of all Ebasco and REM III persons who enter this site. Assistance in implementing this Plan can be obtained from the REM III Health and Safety Manager (HSM), and/or the Ebasco Company Health and Safety Supervisor (CHSS). The content of this HASP may change or undergo revision based upon additional information made available to health and safety (H&S) personnel, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by H&S staff and are subject to approval of the Ebasco CHSS, and the HSM.

SITE: Lee's Lane Landfill SITE NO. 4236.721

PLAN DATE: May 1987

SCOPE OF WORK: Excavation and sampling of approximately 20 test pits along the bank of the Ohio River.

	SITE MANAGER	HEALTH AND SAFETY OFFICER
NAME:	A. O'Rear	M. Bilello
WORK PHONE:	404-662-2207	404-662-2382

EMERGENCY PHONE NUMBERS

	Police Dept.	911
	Fire Dept.	911
	Rescue Service	911
Memorial Hospital	Hospital	502-562-2119
University	Back-up Hospital	502-562-3000
	National Response Center	(800) 424-8802
	Poison Control Center	(800) 822-9761
B. Groves	CHSS	(201) 460-6255
M. Szomjassy	REM III Regional Manager	(404) 662-2378
S. Mason	Field Operations Leader	(404) 662-2207
	REM III HSM (G. Smith or J. Janous)	(703) 558-7506
	Community Relations Coordinator	
	Offsite Emergency Services	
	Site Command Post	None

TELEPHONE ACCESS:

The nearest public phone will be used to summon emergency assistance/services. The nearest public phone is located at Woolsey's Market, 4000 Lee's Lane.

INTERPRETATION OF HEALTH AND SAFETY PLAN

Other on-site personnell, in addition to the emergency contractor will include EPA's Remedial Project Manager (RPM) and Emergency's On-Site Coordinator (OSC). The EPA OSC will have primary responsibility as Health and Safety Coordinator for EPA and the emergency contractor. In case of a difference of opinion in interpretation of this HASP between the Ebasco HSO and EPA Health and Safety Coordinator, work shall cease and all parties shall move out of the contaminated area to resolve their differences in interpretation. Work may start again upon resolution of the opinion differences.

SECTION II: HEALTH AND SAFETY PERSONNEL

2.0 Health and Safety Personnel Designations

The following briefly describes the health and safety designations and general responsibilities which may be employed for the Lee's Lane Site.

2.1 Company Health and Safety Supervisor

The CHSS has overall responsibility for development and implementation of this HASP. He also shall approve any changes to this plan due to modification of procedures or newly proposed site activities.

The CHSS will be responsible for the development of new company safety protocols and procedures necessary for field operations and will also be responsible for the resolution of any outstanding safety issues which arise during the conduct of site work. Health and safety-related duties and responsibilities will be assigned only to qualified individuals by the Ebasco CHSS. Before personnel may work on site, currentness of acceptable medical examination and acceptability of health and safety training must be approved by the CHSS.

2.2 Site Health and Safety Officer

The HSO will be present onsite during the conduct of all level A, or B, or high-hazard level C field operations and will be responsible for all health and safety activities and the delegation of duties to the H&S staff in the field. Where the site is identified as low-hazard level C or level D, the HSO may direct the site health and safety efforts through an assistant health and safety officer approved by the CHSS. The assistant will be responsible for implementation of the HASP. He may direct or participate in downrange activities as appropriate when this does not interfere with his primary HSO responsibility. The HSO has stop-work authorization which he will execute upon his determination of an imminent safety hazard, emergency situation, or other potentially dangerous situations, such as detrimental weather conditions. Authorization to proceed with work will be issued by the CHSS after such action. The HSO will initiate and execute all contact with support facilities and personnel when this action is appropriate.

2.3 Assistant Health and Safety Officer

An Assistant HSO may be designated. On low-hazard level C or level D site he may have collateral duties but must be qualified for the health and safety responsibility by the CHSS. At level A, B or high-hazard level C sites, he will be the down range person who accompanies field sampling teams and will report to the HSO. Additionally, he may be required to support the HSO when multiple operations are conducted that require monitoring and HSO surveillance. His primary responsibility is to provide the appropriate monitoring to ensure the safe conduct of field operations. He will have access to continuous communications with the Command Post. The number of Assistant HSO's will be dependent upon the number of downrange operations occurring simultaneously, site level of protection designation, and the individual assignments made by the HSO. The Assistant HSO will also share responsibility with the Field Operations Lead and the HSO for ensuring that all safety practices are utilized by downrange teams and that during emergency situations appropriate procedures are immediately and effectively initiated. He will also be responsible for the control of specific field operations and all related activities such as personnel decontamination, monitoring of worker heat or cold stress, distribution of safety equipment, and conformance with all other procedures established by the HASP.

2.4 Company Health and Safety Supervisor (CHSS)

The CHSS has overall responsibility to insure that an adequate HASP has been developed for all REM III sites assigned to his company. The CHSS will have review and approval authority over each site-specific HASP, and also may audit field compliance with the HASP to assure consistency with his company H&S policy. He may also be requested by the HSM to perform H&S field audits. In the event H&S issues arise during site operatons, the CHSS will attempt to resolve these if possible. If issues are not immediately resoluble the CHSS shall immediately seek intervention of the HSM who shall have final H&S authority for issue resolution.

SECTION III: SITE HISTORY AND PHYSICAL DESCRIPTION

3.0 Location

The Lees Lane Landfill Site is located approximately 4 miles southwest of Louisville, Kentucky. The site is adjacent to 5000 feet of the Ohio River in Jefferson County.

3.1 Description

The Lee's Lane Landfill Site is composed of three tracts, measuring approximately 5000 feet in length and 1500 feet in width. The site is approximately 112 acres in size with well vegetated sloping terrain in the north and central tracts, the southern tract has steeper slopes and two depression resulting from remaining landfill capacity when the landfill operations ceased.

The site is bordered by a flood protection levee on the east and south. Borden Chemical borders the site to the northeast and to the south is the Louisville Gas and Electric, Cane Run Plant Generating Station. A residential area, Riverside Garden with about 300 homes is located east of the site.

Site access is currently unrestricted to pedestrial traffic, and the site is still used for recreation purposes such as hunting, fishing, and dog walking.

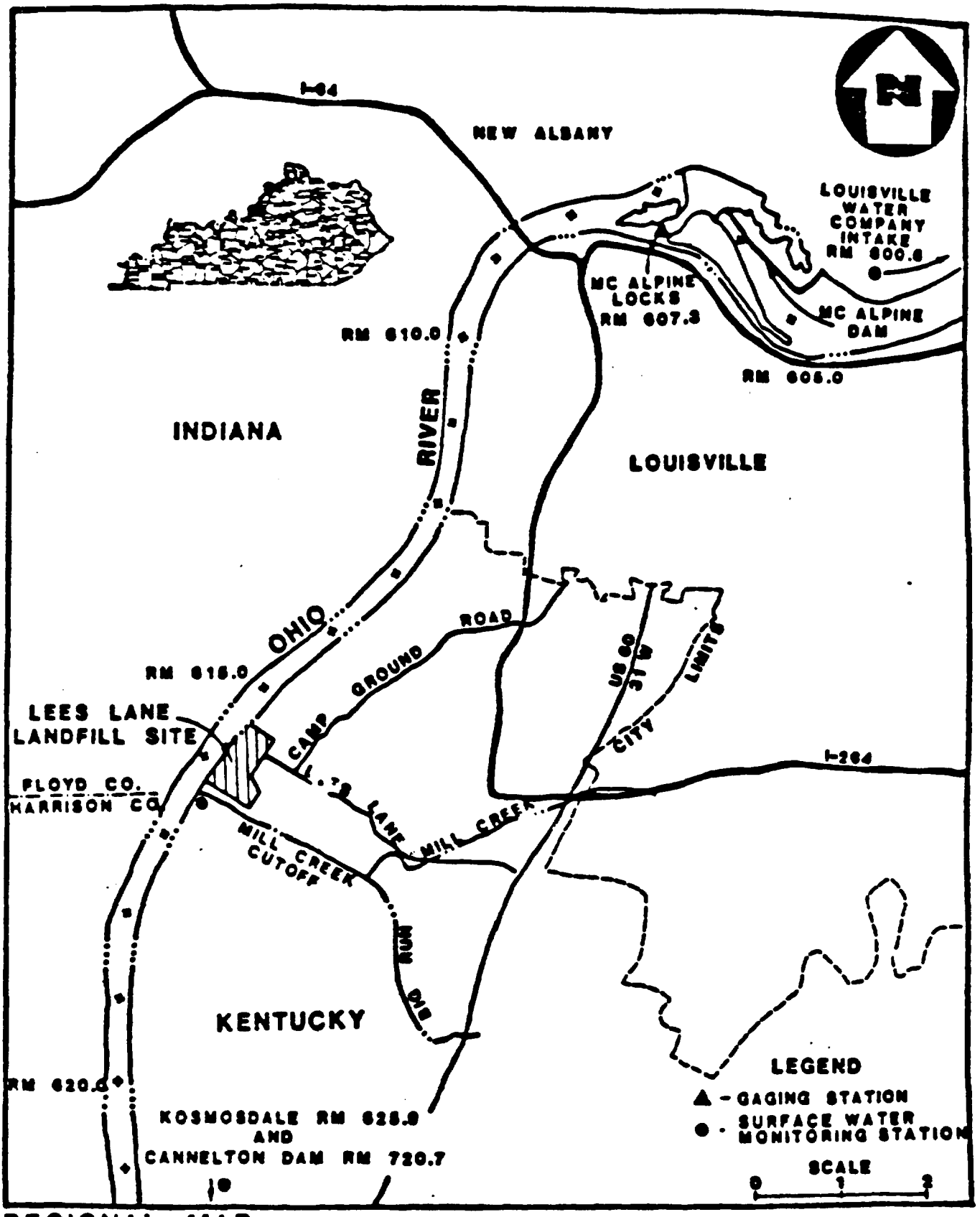
3.3 History

The actual date that operations commenced and Lees Lane is not known, but quarrying began at least as early as the 1940's. Landfilling is also reported to have begun in the late 1940's. Open dumping and landfilling of sand and gravel pits was conducted until the 1960's, when land filling was confined to the sand and gravel pits.

In 1971 the state of Kentucky permitted the Southern Tract under its Solid Waste Program. The permit was not renewed in November of 1974, due to repeated compliance violations.

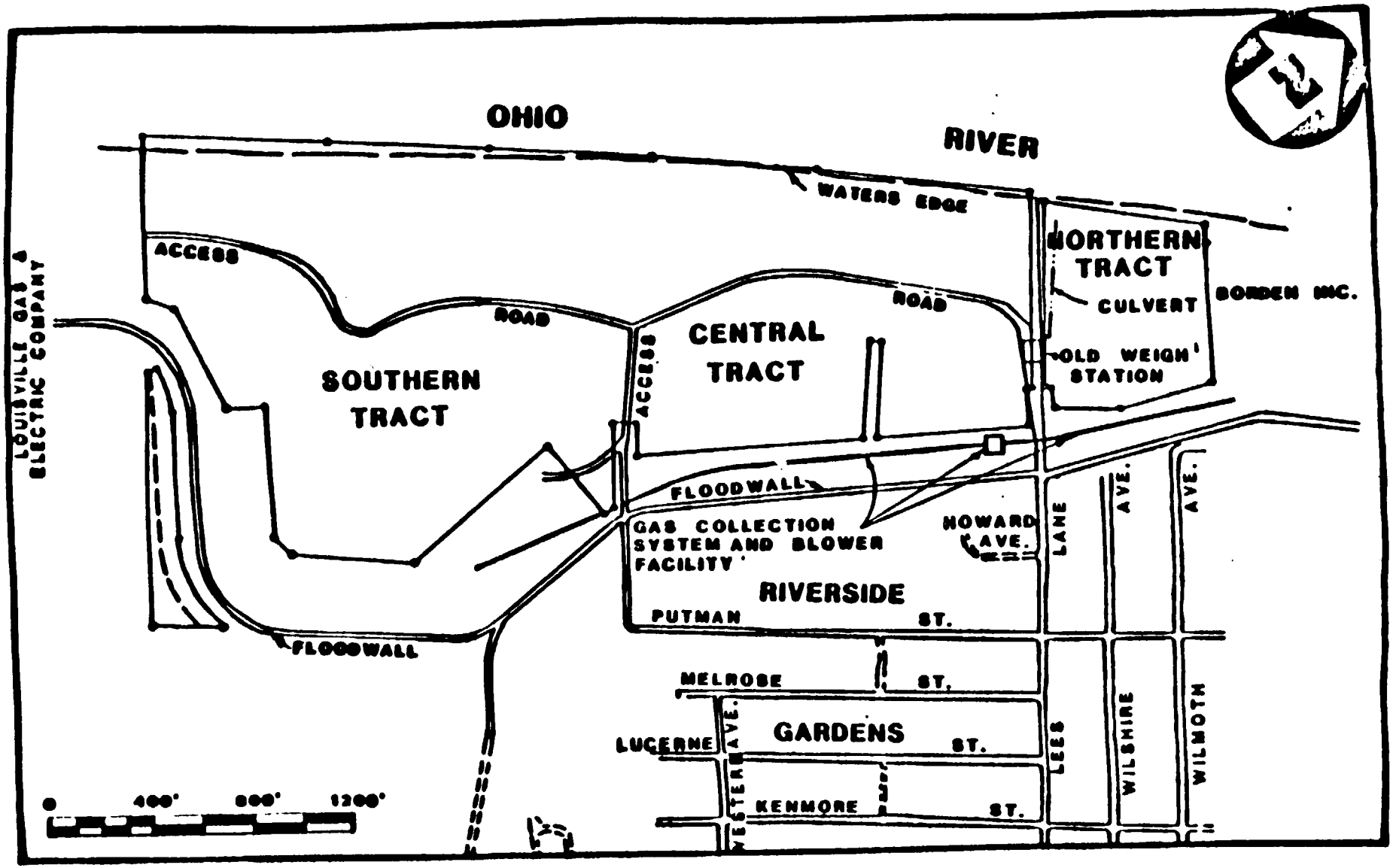
During 1975 a methane gas problem was identified and explosive levels of menthane gas were identified in seven homes in Riverside Gardens, the homes were purchased and the families relocated. Further studies resulted in the installation of a gas collection system in 1980.

In February 1980, 400 drums were discovered near the bank of the Ohio River. Forty of the drums contained hazardous material and were transported off site. Numerous other studies including a remedial investigation (NUS 1986) have been conducted at the site resulting in the installation of ground water monitoring wells .



REGIONAL MAP
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

Figure 1
Source: Final RI/FS
Study of Alternatives
Lee's Lane Landfill Site
April 1986



SITE LAYOUT

LEES LANE LANDFILL SITE

JEFFERSON COUNTY, KENTUCKY

Figure 2

Source: Final RI/FS
Study of Alternatives
Lee's Lane Landf. Site
April 1986

SECTION IV. SITE RELATED INCIDENTS, ACTIONS COMPLAINTS

4.0 General

Below is a review of some of the incidents, actions, or spills that have occurred at the site. This information reflects only the information selected for incorporation in this HASP.

4.1 Gas Collection System

The problem of methane gas migrating off-site was first identified in 1975. Explosive levels of methane and flash fires in the basements of homes in Riverside Gardens resulted in the relocation of seven families, several studies and the installation of a gas collection system in 1980.

4.2 Drums on Site

In 1980, 400 drums were inventoried on site, 300 drums were found to be empty, 60 were identified as containing non-hazardous material, the remaining 40 drums were identified as containing hazardous materials. The 40 hazardous drums were transported offsite, the remaining drums were disposed of onsite. Five of the forty drums classified as hazardous were randomly selected for analysis. The analysis indicated the presence of 51 organic compounds and high concentration of copper, cadmium, nickel, lead and chromium. Among the organic compounds identified were benzene, phenols and their ethylated derivatives.

During a recent site visit (April 1987) numerous drums, all in poor condition, were identified on site along bank of the Ohio River.

SECTION V: WASTE DESCRIPTION

5.0 General

Municipal, domestic, and industrial wastes were disposed of at the Lees Lane Landfill. As was the practive at time of disposal the wastes were comingled during landfilling.

5.1 Waste Types

Four Companies are known to dispose of industrial waste at the Lees Lane Land Fill. Table 1 summarizes the wastes disposed and location of disposal. In addition methane gas and other organic compounds resulting from the decomposing fill are being produced at the site.

5.2 Waste Types:	Liquid	X	Sludge	
	Solid	X	Gas	X
	Semi-Solid			
5.3 Characteristics:	Corrosive	X	Inert	X
	Flammable	X	Radioactive	
	Reactive	X	Volatile	X
	Toxic	X	Other	
5.4 Containment:	Drum	X	Lagoon	
	Tank		Lake	
	Vat		Stream & Lake	
	Pipe		Sediments	

TABLE 1

HAZARDOUS WASTES REPORTED TO BE DISPOSED OF IN LEES LANE LANDFILL

Company	Dates Used	Disposal Areas	Hundred Tons	Type of Waste
The B. F. Goodrich Company - Chemical Group	1948-1971	North Site	1,514	Zinc, cadmium, copper, chromium (trivalent) lead, halogenated aliphatics, acrylates and latex emulsions, plastizers, resins, elastomers.
	1972-1976	South Site	175	
The Harshwaw Chemical Company - A Division of Gulf Oil Corp.	1950-1967	Lees Lane Landing Landfill	1	Arsenic, selenium, antimony, iron, manganese, magnesium, zinc, cadmium, copper, chromium (trivalent and hexavalent), lead, insecticides, amides, amines, imides, resins, salts, miscellaneous paints and pigments.
Rohm & Hass Company - Louisville Plant	1962-1970	West End-Lees Lane	343	Amides, amines, imides, plastizers, resins, salts, acid solutions (with pH less than 3).
Celanese Corporation - Celanese Polymer Special. Co.	1967-1974	Lees Lane Sanitary Landfill	91	Acid solutions (pH less than 3), arsenic, selenium, antimony, mercury, iron, manganese, magnesium, zinc, cadmium, copper, chromium (trivalent and hexavalent), lead, halogenated aliphatics, amides, amines, imides, resins, polar and non-polar solvents, oils and oil sludges, esters, and ethers, alcohols, ketones and aldehydes, salts, miscellaneous paints and pigments, asbestos, wastes with flash point below 100° F.

Source: Eckhardt, 1979.

SECTION VI: HAZARD ASSESSMENT

The major toxic contaminants found in the soil at Lees Lane Landfill are arsenic, lead, and chromium. In addition, trace amounts of polynuclear aromatic hydrocarbons (PAH) were found in surface soil samples. The routes of exposure from these contaminants are inhalation of suspended particles, dermal absorption, and oral ingestion.

The likelihood of dermal absorption of these toxic compounds is low because of the low skin absorption rate of metal cations and salts and the low concentrations of PAH compounds in the soil. However, direct skin contact with soil or waste should be avoided. The proper use of personnel protection and decontamination procedures should adequately handle direct skin contact.

Exposure of personnel through oral ingestion to site contaminants can be adequately handled through contaminant avoidance such as good safety practices as no eating, drinking, or smoking on site.

Inhalation exposure to these contaminants by dust control and avoidance of working during dusty conditions.

SECTION VII: TRAINING

7.0 Basic Training Required

Completion of the REM III Fundamental Health and Safety Training or the approved equivalent is required for all employees who will perform work in areas where the potential for a toxic exposure exists. Typically these areas have been designated as exclusion zones: Training or training and site experience must also comform to the requirements of 29 CFR 1910.120.

7.1 Advanced Training

Advanced Training as necessary will be provided to any personnel who will be expected to perform site work utilizing Level A protection or other specialized operation to be undertaken at a site. An Emergency Response Team shall be formed and trained to carry out Level A work.

7.2 Site-Specific Training

Training will be provided that will specifically address the activities, procedures, monitoring, and equipment for the site operations. It will include site and facility layout, hazards, and emergency services at the site, and will detail all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

7.3 Safety Briefings

Project personnel will be given briefings by the HSO or Assistant HSO on a daily or as needed basis to further assist site personnel in conducting their activities safely. It will be provided when new operations are to be conducted, changes in work practices must be implemented due to new information made available, or if site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices when performance deficiencies are identified during routine daily activities or as a result of safety audits.

7.4 First Aid and CPR

The CHSS will identify those individuals requiring this training in order to ensure emergency treatment is available at field activities. It is expected that the selected number of field workers will have First Aid training and several members of the field team will have CPR training. These courses will be consistent with the requirements of the American Red Cross Association.

SECTION VIII: ZONES, PROTECTION, AND COMMUNICATION

8.1 SITE ZONES

The area of primary operations will be along a one mile section of the Ohio River Bank. Due to the limited access from the river bank to a suitable area for decontamination the river bank will be considered the contamination reduction corridor. A centralized area will be established for personnel and portable equipment decontamination. Due to the work being conducted over such a large area the exclusion zone will be extended from the contamination reduction corridor to the test pit location.

The contamination reduction zone (CRZ) will contain the necessary materials for personnel and portable equipment contamination. Also located in the CRZ will be safety equipment such as emergency eyewash fire extinguishers, stretcher, first aid and other appropriate equipment.

8.2 PERSONAL PROTECTION

8.2.1 General

The level of protection to be worn by field personnel will be defined and controlled by the HSO with approval of the CHSS. Basic levels of protection for general operations are outlined in the REM III Personal Protection Guidelines HS-2. Where more than one hazard area is indicated, further definition shall be provided by review of site hazards, conditions, and proposed operational requirements and by monitoring at the particular operation being conducted. Protection may be upgraded or downgraded, as appropriate, only after the HSO receives authorization from the Ebasco CHSS.

Task	Level of Protection
H&S Reconnaissance	D
Sampling Reconnaisance	D/C
Surveying Operations	D
Soil Sampling	D/C
Decontamination (CRC)	D
Decontamination of Heavy Equipment	C
Decontamination of Sampling Equipment	D/C
General Clean Area Work	D

Monitoring will be performed by the HSO to determine the level of protection for those operations listed above that have more than one level of protection indicated.

8.2.2 Initial Levels Of Protection

Initial levels of protection will be employed during the performance of the Initial Reconnaissance. The recon team is anticipated to consist of a minimum number of personnel. The HSO, the Site Manager, or Site Project Engineer, and other appropriate support personnel may be required. The team will enter hazardous areas in conservatively-specified protection with appropriate monitoring equipment. The Initial Reconnaissance will allow for the selection of appropriate protection levels for planned operations, decontamination procedures, site layout, sampling strategies, and general safety planning. It should be noted that this HASP allows for upgrading or downgrading of protection levels to conservatively preclude any potential for contamination while not sacrificing protection or efficiency. During the Initial Reconnaissance, the team will perform various monitoring techniques to identify the presence of contaminants as well as assessing the integrity of the site in consideration of safety for the proposed site investigation, sampling, or construction operations.

The following generically describes the equipment that comprises the various levels of protection indicated in Section 8.2.1. For specific site conditions or work tasks modifications or alterations for each of these levels may be necessary. These minor changes will be implemented by the H&S Officer as necessary.

For Tasks requiring Level C Protection or in the event of upgrading:

- Full face air-purifying respirator with appropriate cartridge;
- Emergency escape respirator (carried when appropriate);
- Chemical protective suit (e.g., polycoated TYVEK);
- Gloves, inner (surgical type);
- Gloves, outer (chemical protective);
- Boots (chemical protective), steel toe;
- Booties, (optional);
- Hard hat; and
- 2-way radio (intrinsically safe).

For Tasks requiring Level D Protection:

- Air purifying or emergency escape respirator (available);
- Coveralls;
- Gloves (chemical resistant);
- Boots/shoes (safety/chemical protective)
- Hard hat with eye protection.

8.2.3 Safety Equipment

Basic emergency and first aid equipment will be available at the Support Zone and/or the CRC, as appropriate. This shall include HASP-specified communications, first aid kit, emergency eyewash fire extinguishers, and

other safety-related equipment. Also located in the Support Zone or the CRZ will be a backup field team when required to support downrange field teams. The Command Post will be manned during all times when teams are downrange, communications will be maintained, and personnel will be available to assist in decontamination procedures for personnal and equipment. Other safety equipment will be located at the site of specific operations, as appropriate.

8.3 COMMUNICATIONS

- Walkie-Talkies - Hand held units shall be utilized as much as possible by field teams for communication between downrange operations and the Command Post base-station.

- Telephones - The nearest public phone is located in Woolsey's Market (4000 Lees Lane).

- Air Horns - These will be carried by downrange field teams and also will be maintained at the Support Zone for announcing emergency evacuation procedures (see Section XIV) and backup for other forms of communications.

- Hand signals - To be employed by downrange field teams along with utilizing the buddy system. These signals are also very important when working with heavy equipment. They shall be known by the entire field team before operations commence and covered during site-specific training.

SECTION IX: MONITORING PROCEDURES

9.1 MONITORING DURING SITE OPERATIONS

All site environmental monitoring should be accompanied by meteorological monitoring of appropriate climatic conditions.

9.1.1 Excavation Operations - Monitoring will be performed continuously during all excavation and sampling operations. A Photo Ionization Detector (PID) and/or Flame Ionization Detector (FID) will be utilized to monitor the breathing zone, the excavated area and any material taken from an excavation. Any breathing zone measurement of organic vapors greater than 0.2 ppm above background will initiate the use of Level C personal protective equipment (PPE). Measurements of 5 ppm above background or greater will necessitate evacuation of the exclusion zone. The open excavation will be monitored by the H&S Officer to establish the level of organic vapors present which could be potentially transported downwind to unprotected on-site and off-site personnel. Excavated materials should also be monitored to determine if they are a source of a respirable hazard and to segregate contaminated from uncontaminated materials. Monitoring with a Combustible Gas Indicator (CGI) will be performed to determine the potential for build up of a combustible environment within the excavation. Readings equal to or greater than 10% of the Lower Explosive Limit (LEL) require continuous monitoring; readings greater than 25% of the Lower Explosive Limit (LEL) require that operations stop and evacuation procedures be initiated. All areas must be cleared by the H&S Officer before any on-site activities can resume.

If at anytime the levels of organic vapors outside of the exclusion zone exceed 0.2 ppm above background then several options must be considered. One option is the expansion of the Exclusion Zone. If public health would be endangered by the expansion of the Exclusion Zone then the test pit must be covered or filled in immediately. If vapors originating from test pit cannot be supressed and pose a threat to public health then the work will cease and the excavation filled in.

9.1.2 Surveying

Monitoring for organic vapors and combustible gas will be conducted during survey activities. If they are conducted in the exclusion zone set up around open test pits. The action levels for PPE upgrade will be the same as that used for excavation operation.

9.2 MEDICAL SURVEILLANCE PROCEDURES

All REM III personnel and REM III subcontractors who will be performing field work at the Lee's Lane Landfill Site will be required to have passed a REM III's medical surveillance examination or equivalent. A release for work will be confirmed by the Ebasco CHSS before an employee can begin hazardous activities. The exam will be taken annually at a minimum and upon termination of REM III work. Additional medical testing may be required by the Ebasco CHSS in consultation with the company physician and the HSO if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

SECTION X: SAFETY CONSIDERATIONS FOR SITE OPERATIONS

10.1 General

All field sampling will be performed under the level of protection described in Section VII, and instituted by the Health and Safety Officer. The level of protection will be established by review of facility history, available data, and especially by the results of the Health and Safety Reconnaissance and other monitoring performed for each operation.

10.2 Health and Safety Reconnaissance

Safety considerations during the H&S Reconnaissance or reconnaissance of any new areas are important since these activities will precede all other field operations. Reconnaissance will be conducted under Level D in those areas identified by the H&S Officer, provided there is sufficient support information to justify Level D protection. Where direct reading instruments (i.e., PID and/or FID) indicate greater than 0.2 ppm above background (non-methane reading), Level C protection will be utilized. The team will maintain line of sight with each other at all times and maintain communications. Monitoring will be performed as indicated in Section IX and will be used to alert the recon team if a dangerous situation exists. The monitoring will also assist in prescribing levels of protection for future site operations, designating site layout and identifying areas of particular hazards, if any.

10.3.0 Field Sampling Operations

10.3.1 Test Pits

A Health and Safety Officer will be present on-site during all Test Pit Excavation and samples and will provide monitoring to ensure that appropriate levels of protection and safety procedures are used. The proximity of water, sewer and electrical lines will be confirmed before the digging of test pits is attempted. A minimum distance of 10 feet must be maintained between any equipment and any transmission lines rating 50kv or less. For lines greater than 50kv the required distance is 10 feet plus 1/4 inch for every 1kv over 50kv. The possibility for the presence of underground conduits or vessels containing materials under pressure will be investigated before attempting any operations and clearance provided by project management. The location of safety equipment and evacuation procedures will be established prior to initiation of operations. The use of all protective clothing, especially hard hats, eye protection and safety boots, will be required during drilling or other heavy equipment operations.

SECTION X: SAFETY CONSIDERATIONS FOR SITE OPERATIONS

Communications will be maintained at all times. During excavation of test pits special monitoring will be performed as described in Section IX and will be used to protect any persons downwind of an operation. Contaminated materials which are excavated will be monitored and the H&S Officer will determine if the excavated materials are contaminated. Special caution will be given to the stability of the excavation relative to the potential for collapse of the pit walls. All activities will be conducted from the ground surface and only necessary personnel will be permitted within the retricted area (i.e., a 30 foot radius around the test pit). No one is permitted to enter the test pit without special clearance from the H&S Officer, CHSS and Site Manager. OSHA standards will be observed regarding test pit construction, shoring requirements, etc.

10.3.2 Soil Sampling

Personnel must wear prescribed clothing including eye protection, chemical resistant gloves and clothing (as appropriate) when sampling as established by the H&S Officer. Sample bottles may be bagged prior to sampling to ease decontamination procedures. Be aware of emergency evacuation procedures and the location of all emergency equipment, including spill containment materials, prior to sampling. Practice contamination avoidance at all times. Utilize the buddy system and maintain communications at all times.

10.3.3 Sample Handling

Personnel responsible for the handling of samples will wear prescribed level of protection as indicated by the H&S Officer. Samples should be identified as to their hazard and packaged as to prevent spillage or breakage. Any unusual sample conditions should be noted. Lab personnel should be advised of sample hazard level and the potential contaminants present. This is to be accomplished when necessary by a phone call to lab coordinator and/or including a written statement with samples.

10.3.4 Surveying

Personnel responsible for surveying will wear prescribed level of protection. Survey personnel should be alert for any obvious such as stains, vegetative stress drums, etc. These areas should be avoided. Voice or radio contact and visual contact must alway be maintained between survey crew members.

SECTION XI: DECONTAMINATION PROCEDURES

11.1 Personnel and Equipment Decontamination Procedures

All personnel and equipment used down range shall upon exiting the Exclusion Zone be subject to a thorough decontamination process. All boots and gloves will be deconned using soap and water solution and scrub brushes. When level C protection is employed, the protective suit will be subject to a gross wash and rinse using a spray applied soap and water solution or simple removal and disposal.

All used respiratory protective equipment will be deconned daily and sanitized with MSA Sanitizer II.

11.2 Heavy Equipment Decontamination Procedures

Heavy equipment exiting the Contamination Reduction Corridor (CRC) will be steam cleaned before it is permitted to leave the (CRC). The heavy equipment decon will take place adjacent to the paved access road with consideration for the use of screens or natural topography to prevent the spread of air contaminants during the steam cleaning. The liquids generated from decontamination will be left at point of contamination. Items needed for the heavy equipment decon operation include a steam generator with high pressure water, empty containers, screens and screen support structures and shovels.

SECTION XII: ADDITIONAL SAFE WORK PRACTICES

Refer to H&S Officer for specific concerns for each individual site task. Do not climb over/under drums, or other obstacles and always employ buddy system. Practice contamination avoidance, on and off-site. Also, due to the unknown nature of waste placement at the site, extreme caution should be practiced during test pit excavation operations. Render immediate first aid to any and all cuts, scratches, abrasions, etc. Be alert to your own physical condition and watch your buddy for signs of fatigue, exposure, etc. A work/rest regime will be initiated when ambient temperatures and protective clothing create a potential heat stress situation. No work will be conducted without adequate natural light nor without appropriate supervision. Task safety briefings will be held prior to onset of task work.

SECTION XIII: DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects will be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard or causing litter to be left onsite. All potentially contaminated materials, e.g., TYVEK suits, gloves, etc., will be bagged or drummed as necessary and segregated for future disposal. All contaminated waste materials will be disposed of in accordance with all applicable regulations. All non-contaminated materials will be collected and bagged for appropriate disposal as normal domestic waste.

SECTION XIV: EMERGENCY PLAN

14.0 Emergency Plan

During the excavation of the test pit a possibility exists for uncovering buried drums of hazardous material. Any unearthed drums will be immediately backfilled if it is possible, without placing workers in danger.

If a release does occur the emergency coordinator will contact the following people as required to initiate the proper action or evacuation to preclude any impact on residents or the environment.

Hazard	Contact	Action
PID/FID Concentration 0.2 ppm above background (non methane) at site boundary	Police	Fill in excavation, testpit, evacuate nearby residents if levels do not subside quickly below .2 above background after the point source has been covered.
Fire-explosion	Fire Department	Evacuation of site personnel monitor downwind site boundary
Release into Ohio River	Coast Guard	Limit release if possible, until Coast Guard can respond.

Contacts have been (will be) made with the following individuals:

Name	Title	Jurisdiction

14.1 The Site Emergency Coordinator is:

Field Operations Leader Sam Mason
HSO (Alternate) M. Bilello

The emergency coordinator shall make contact with local fire, police and other emergency units prior to beginning work on site. In these contacts the emergency coordinator will inform the emergency units about the nature and duration of work expected on the site and the type of contaminants and possible health or safety effects of emergencies involving these contaminants. Also at this time the emergency coordinator and the emergency response units shall make arrangements to handle any emergencies that might be anticipated.

The emergency coordinator shall implement the contingency plan whenever conditions at the site warrant such action. The coordinator will be responsible for assuring the evacuation, emergency treatment, emergency transport of site personnel as necessary, and notification of emergency response units and the appropriate Management staff.

14.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of toxic gases, etc.; an air horn or other appropriate device will be sounded for approximately 10 seconds indicating the initiation of evacuation procedures. All personnel in both the restricted and nonrestricted areas will evacuate and assemble near the Support Zone or other safe area as indentified by the emergency plan. The location shall be upwind of the site as determined by the wind direction indicator. For efficient and safe site evacuation and assessment of the emergency situation, the Emergency Coordinator will have authority to initiate proper action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The HSO or Assistant HSO must see that access for emergency equipment is provided and that all combustion apparatus has been shut down once the alarm has been sounded. Once the safety of all personnel is established the Fire Dept. and other emergency response groups will be notified by telephone of the emergency The site evacuation plan shall be rehearsed regularly as part of the overall training program for site operations.

14.3 Potential or Actual Fire or Explosion

Immediate evacuation of site (air horn will sound for 10 second intervals) notify local fire and police department, and other appropriate emergency response groups if LEL values are above 25% in the work zone or if an actual fire or explosion has taken place.

Fire Dept. - 911
Police Dept. - 911

14.4 Environmental Incident (Release or Spread of Contamination)

Control or stop spread of contamination if possible. The emergency coordinator should instruct a person on site to immediately contact local authorities to inform them of the possible or immediate need for neighborhood evacuation. If a significant release has occurred, the National Response Center should then be contacted. This group will alert National or Regional Response Teams as necessary. Following these emergency calls, the reporting individual should then notify the SM, CHSS, RM, and HSM.

		PHONE
	Fire Department	911 (502) 588-3411
	Police Department	911
	Coast Guard	(502) 582-5194
	National Response Center	(800) 424-8802
A. O'Rear	SM	(404) 662-2207
B. Groves	CHSS	(201) 460-6255
M. Szomjassy	RM	(404) 662-2378
J. Janous	HSM	(703) 558-7506

14.5 Personnel Injury

Emergency first aid shall be applied onsite as deemed necessary. Then, decontaminate and transport the individual to nearest medical facility if needed. The HSO will supply medical data sheets to appropriate medical personnel and complete the incident report designated in HS-1.12.

Hospital - Memorial Hospital (502) 562-2119
Rescue - 911

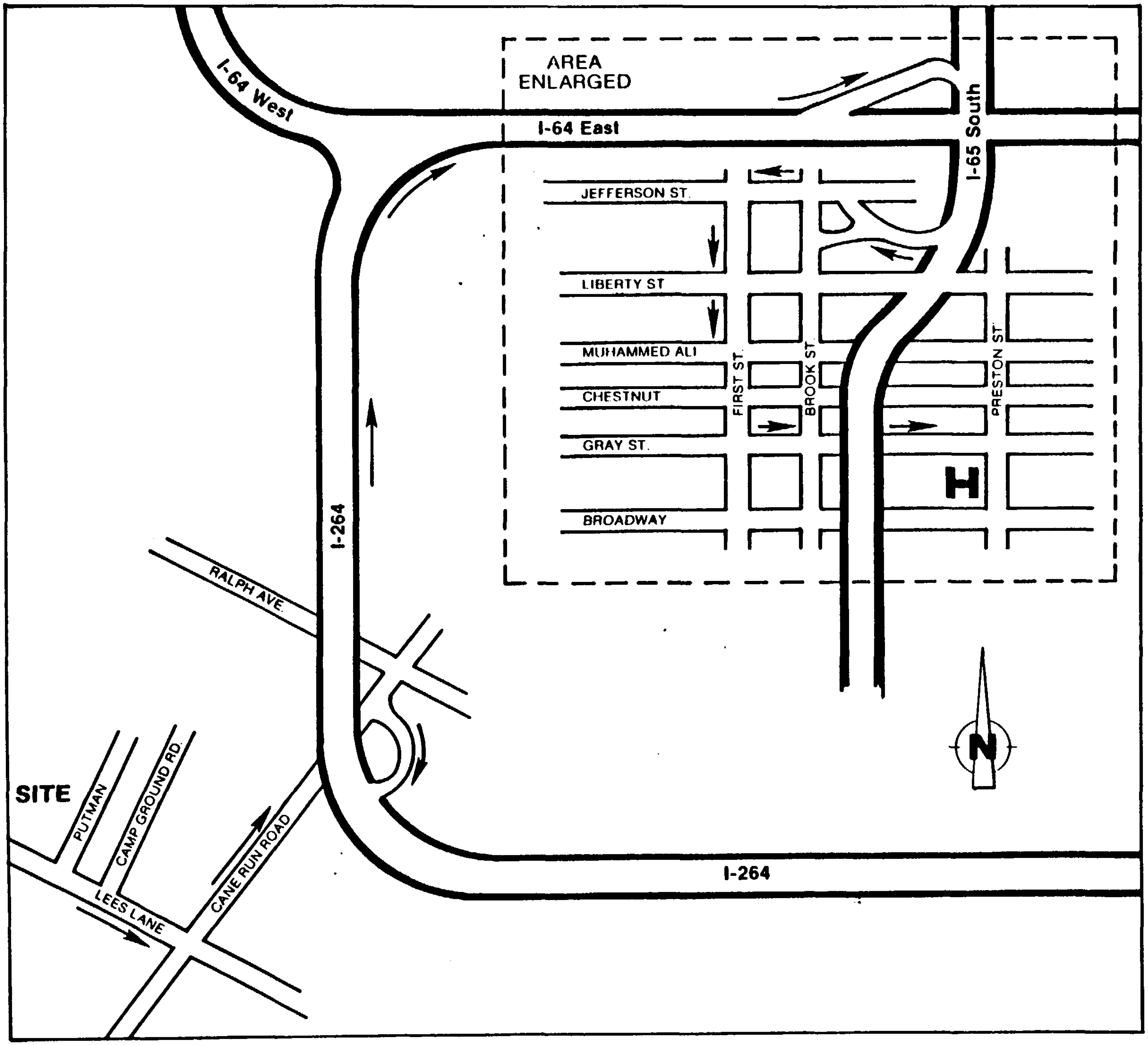
The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. However, since some situations may require transport of an injured party by other means, a hospital route must be firmly identified. During the initial reconnaissance a primary hospital and back-up facility shall be located and route located to and from site with details of the route delineated. The hospital route location map on the following page will be conspicuously posted on site.

Primary Hospital Route:

1) From site take Lees Lane to Cane Run Road
2) Turn left onto Cane Run Road North
3) Take Cane Run Road to I-264 West
4) From I-264 Take I-64 East
5) Exit I-64 East to Jefferson Street Exit
6) From Jefferson Steet Turn Left Onto First Street
7) The Left Onto Gray Street
8) Emergency Room is Two Blocks Down Gray Street

Backup Hospital Route: Phone (502) 562-3000

1) Exist site onto Lees Lane
2) Take Lees Lane to US 60 North
3) From US 60 take I-264 East
4) Exit I-264 East to 65 North
5) Exit 65 North at Broadway Exit
6) At Broadway Exit cross Broadway onto 2nd Street
7) At First Street turn right onto Chestnut Street
8) The Hospital is located on Chestnut Street between Jackson and Hancock



DIRECTIONS

ROUTE TO:
METHODIST HOSPITAL

FROM:
LEE'S LANE LANDFILL

- From site take Lee's Lane to Cane Run Road
- Turn LEFT on Cane Run Road (North)
- From Cane Run Road take I-264 WEST to I-64 EAST
- Exit I-64 WEST at the Jefferson St. exit
- Take Jefferson St. to First St.
- Turn LEFT onto First St.
- Then LEFT onto Gray St.
- Emergency room is two blocks down Gray St.

Figure 3
Primary Hospital Route Ma

14.6 Overt Personnel Exposure

Include generic first aid procedures in this section. Typical response includes:

SKIN CONTACT:	Use copious amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention. Eyewash and emergency shower or drench system will be provided onsite at the CRZ and/or Support Zone as appropriate. Eyes should be rinsed for 15 minutes upon chemical contamination.
INHALATION:	Move to fresh air and/or, if necessary decon/transport to hospital.
INGESTION:	Decontamination and transport to emergency medical facility
PUNCTURE WOUND OR LACERATION:	Decontaminate and transport to emergency medical facility. HSO will provide medical data sheets to medical personnel as requested (see Section XVI)..

Hospital - Memorial Hospital (502) 562-2199
Rescue - 911

14.7 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold related injuries
- Treacherous weather-related working conditions
- Limited visibility
- Potential for electrical storms

SECTION XV: AUTHORIZATIONS

Personnel authorized to enter the Lees Lane Landfill Site while operations are being conducted must be certified by the Ebasco CHSS. Authorization will involve completion of appropriate training courses and medical examination requirements as required by OSHA 29 CFR 1910.10 and review and sign-off of this HASP. All personnel must utilize the buddy system or trained escort, and check in with the Field Team Leader at the Command Post.

1. Personnel Authorized to Perform Work Onsite:

1.	Mike Bilello	11.	
2.	Al O'Rear	12.	
3.	Sam Mason	13	
4.	Colette Botts	14.	
5.		15.	
6.		16.	
7.		17.	
8.		18.	
9.		19.	
10.		20.	

2. Other Personnel Authorized to Enter Site:

1.	ZPMO Personnel	6.	Bruce Groves
2.	REM III Regional Personnel	7.	
3.	EPA Personnel	8.	
4.	State Environmental Personnel	9.	
5.	Police, Fire, Emergency Personnel	10.	

SECTION XVI: MEDICAL DATA SHEET

This brief Medical Data Sheet will be completed by all onsite personnel and will be kept in the Command Post during the conduct of site operations. Completion is required in addition to compliance with the Medical Surveillance Program requirements described in the REM III Program Health and Safety Plan. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project Lee's Lane Landfill

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next of Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses or Exposures to Hazardous Chemicals _____

_____

_____

What medications are you presently using? _____

_____

_____

Do you have any medical restrictions? _____

_____

Name, Address, and phone number of personal physician: _____

_____

_____

_____

_____

SECTION XVII: FIELD TEAM REVIEW

Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provisions contained therein.

Site/Project: Lee's Lane Landfill

Name Printed	Signature	Date

SECTION XVIII: APPROVALS

By their signature the undersigned certify that this HASP is approved and will be utilized at the Lees Lane Landfill site.

Health and Safety Officer
Michael A. Bilello

Date

Al O'Rear

Site Manager
Al O'Rear

5/15/1987
Date

Company Health and Safety Supervisor
Bruce Groves

Date

Al O'Rear for

Regional Manager, REM III
Region IV
Mike Szomjassy

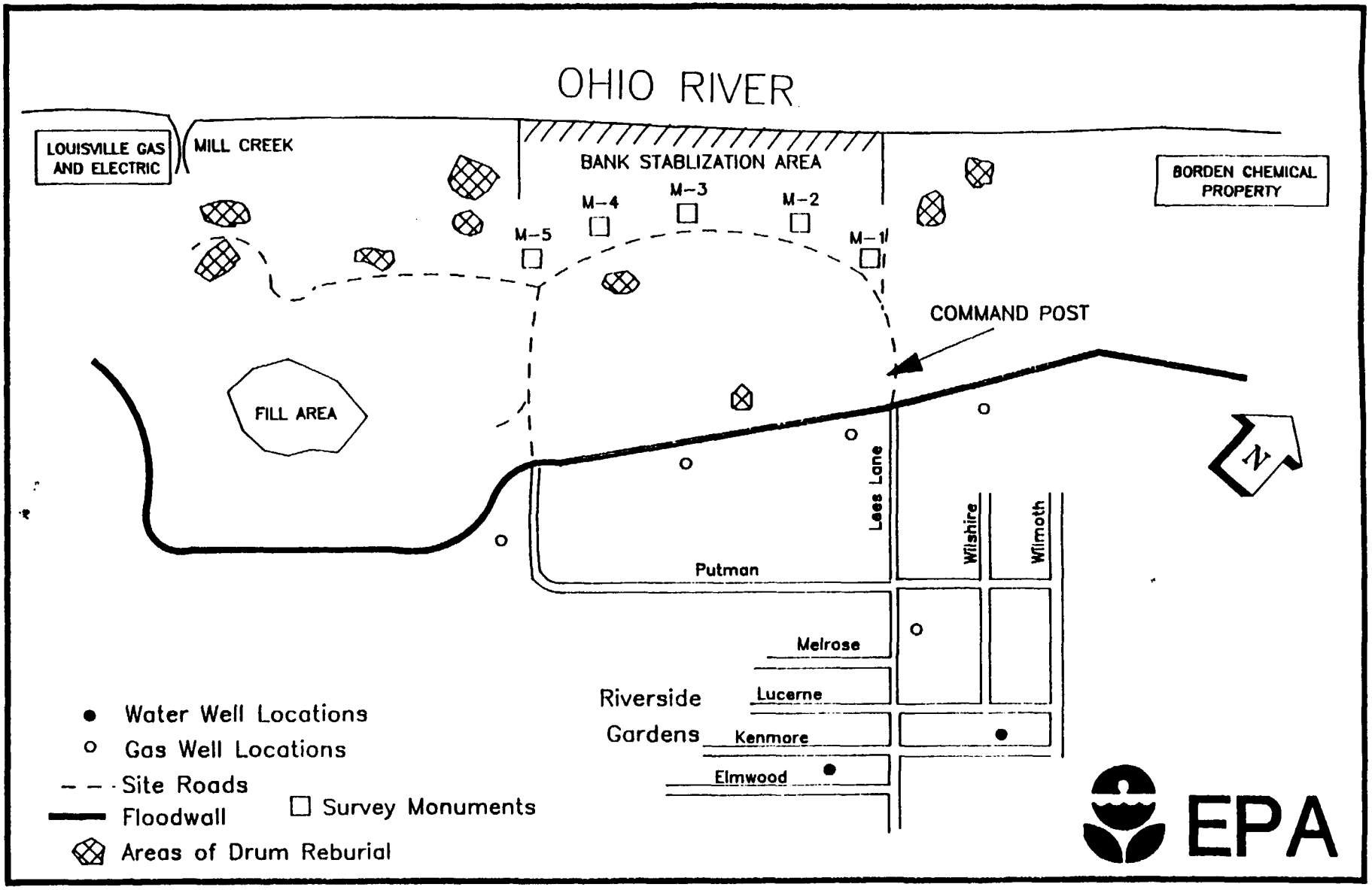
5/15/1987
Date

REM III Health and Safety Manager
John Janous

Date

SECTION VII

Monitoring Well Specification



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SITE: Lees Lane Landfill

ACTIVITY DESCRIPTION: Map of site showing well locations

TDD NO.: 04-8706-04

DATE: 16 December 1987

BACKGROUND AND SITE-SPECIFIC TECHNICAL SPECIFICATIONS

I. Project Title

Drilling of boreholes and installation of gas monitor wells at the Lees Lane Landfill Site in Louisville, Kentucky, for the U.S. Environmental Protection Agency (EPA).

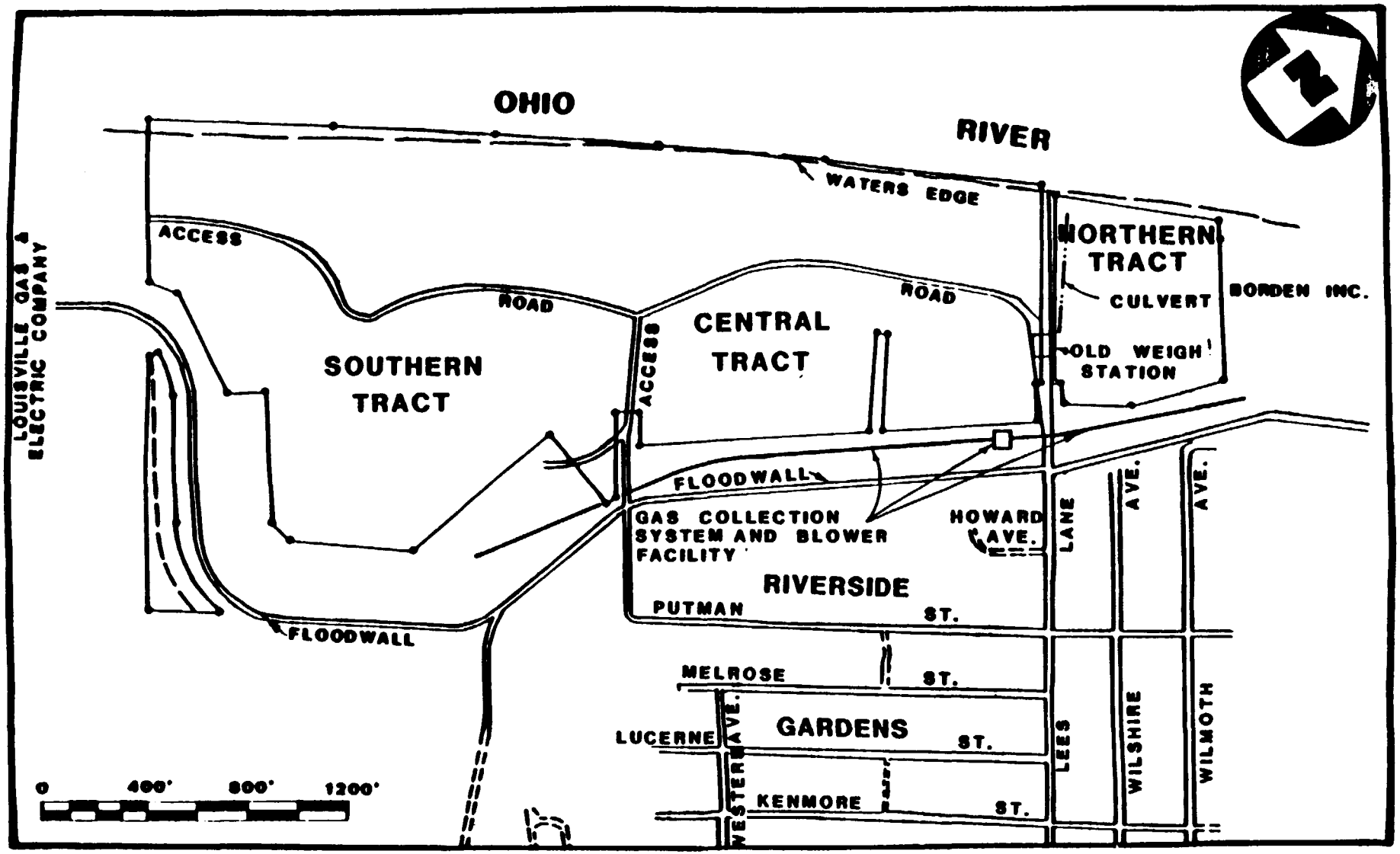
II. Background

The Lees Lane Landfill Site is located adjacent to the Ohio River in Jefferson County, approximately 4.4 miles southwest of Louisville, Kentucky. The site, consisting of approximately 112 acres, is composed of three tracts and measures approximately 5,000 feet in length and 1,500 feet in width (see Figure 1). The Northern and Central Tracts of the landfill consist of level to gently sloping land while the Southern Tract contains two depressions with steep slopes. Up to three terraces, each approximately 20 feet wide, form the slope on the river side of the landfill. Much of the landfill surface is covered with well-established vegetation ranging from brush to woodlands. Elevations range from 383 feet above mean sea level (amsl) along the Ohio River to 461 feet amsl along the levee.

The site is bordered on the east and south by a flood protection levee (designed on the 500-year flood). To the northeast is Borden, Incorporated (a chemical manufacturer), to the south is Louisville Gas and Electric, Cane Run Plant (a coal-burning generating station), and to the east is Riverside Gardens (a residential development of about 330 homes and 1,100 people). Beyond these areas the surrounding land use is predominantly woodlands and agricultural land.

The geology of the site area consists of approximately 110 feet of Ohio river alluvium and clacial outwash underlain by the New Albany shale, reported to be 100 feet thick. The alluvial aquifer is unconfined with the shale forming an aquitard between the alluvial aquifer and the deeper limestone aquifers. The water table is approximately 50 feet below land surface and the saturated thickness of the aquifer is approximately 60 feet. Flow in the aquifer is predominantly toward the Ohio river. Water levels in the aquifer vary with fluctuations of the Ohio River and up to seven feet of variation in water levels were observed during the RI.

Based on a United States Geological Survey boring in the river in 1945, the Ohio River bed is approximately 30 feet above the shale bedrock. The average Ohio River flow at the site is approximately 114,000 cubic feet per seocnd (cfs). Flood conditions occur every 1.2 years and have



SITE LAYOUT

LEES LANE LANDFILL SITE

JEFFERSON COUNTY , KENTUCKY

FIGURE 1

NUS CORPORATION

A Halliburton Company

an average duration of 12 days. Based on the designated 100-year flood level of 447.6 feet amsl, which occurred in 1945, 25 to 50 percent of the landfill would be inundated with water.

Domestic, commercial, and industrial wastes were disposed of in the landfill from the late 1940s to 1975. Prior to and during its use as a landfill, sand and gravel were quarried at the site by the Hofgesang Company. In 1971, the State permitted the Southern Tract of the landfill under its Solid Waste Program. In 1974, the Lees Lane Landfill permit expired and, due to repeated compliance violations, was not renewed.

In March 1975, the Jefferson County Department of Public Health was notified of the presence of methane gas in Riverside Gardens. As a result of explosive levels of methane gas, seven families along Putman Street were evacuated by the Jefferson County Housing Authority. The homes were purchased and the families were relocated at a cost of $150,000. In April 1975, the Kentucky Natural Resources and Environmental Protection Cabinet (NREPC) filed a lawsuit that resulted in landfill closure. All construction requiring excavation was prohibited within 860 feet of the landfill and any construction proposed within 1,500 feet of the landfill required a gas test.

Between 1975 and 1979, 44 gas observation wells were installed in and around the landfill and in Riverside Gardens to monitor the concentrations, pressure, and lateral extent of methane migration. Samples collected from these wells indicated that the source of the methane and associated toxic gases was the decomposition of landfill wastes. In October 1980, a gas collection system was installed on the site between the fill and Riverside Gardens.

In December 1982, EPA evaluated the Lees Lane Landfill Site using the Hazard Ranking System (HRS) as described in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The overall HRS score was 47.46, which ranked the site in Group 6 on the proposed National Priorities List (NPL). The site received a high ranking due to the distance to the nearest population (300 feet), the floodway location, the identification of landfilled hazardous waste (chromium and vinyl chloride), and the distance to the nearest well (Riverside Gardens). As of August 1987, remedial actions at the site were being pursued. These specifications are a direct response to the proposed remedial design selected by the EPA for this site.

III Site-Specific Technical Specifications

This section provides site specifications and details of the scope of this solicitation. The observation well installations described herein are for the purpose of monitoring the migration of volatile compounds through the subsurface regions of the landfill.

A. General

The Lees Lane Landfill Site has been shown to produce methane gas. The gas, which may contain other contaminants, has the potential to migrate offsite. The subsurface gas migration detection program will require the installation of new observation wells since the existing wells have been damaged or removed. Four sets of monitor wells, each consisting of one deep and one shallow well, will be installed outside of the floodwall between the landfill and Riverside Gardens. One additional well will be located along Putnam Street (see Figure 2).

A.1 Scope

Work covered consists of providing all necessary labor and materials required by these specifications for the installation of ten gas monitor wells. The boreholes for the deep wells will be drilled to a depth not to exceed 40 feet below land surface, (bls). The boreholes for the four shallow wells will be drilled to a depth of approximately 15 feet, bls.

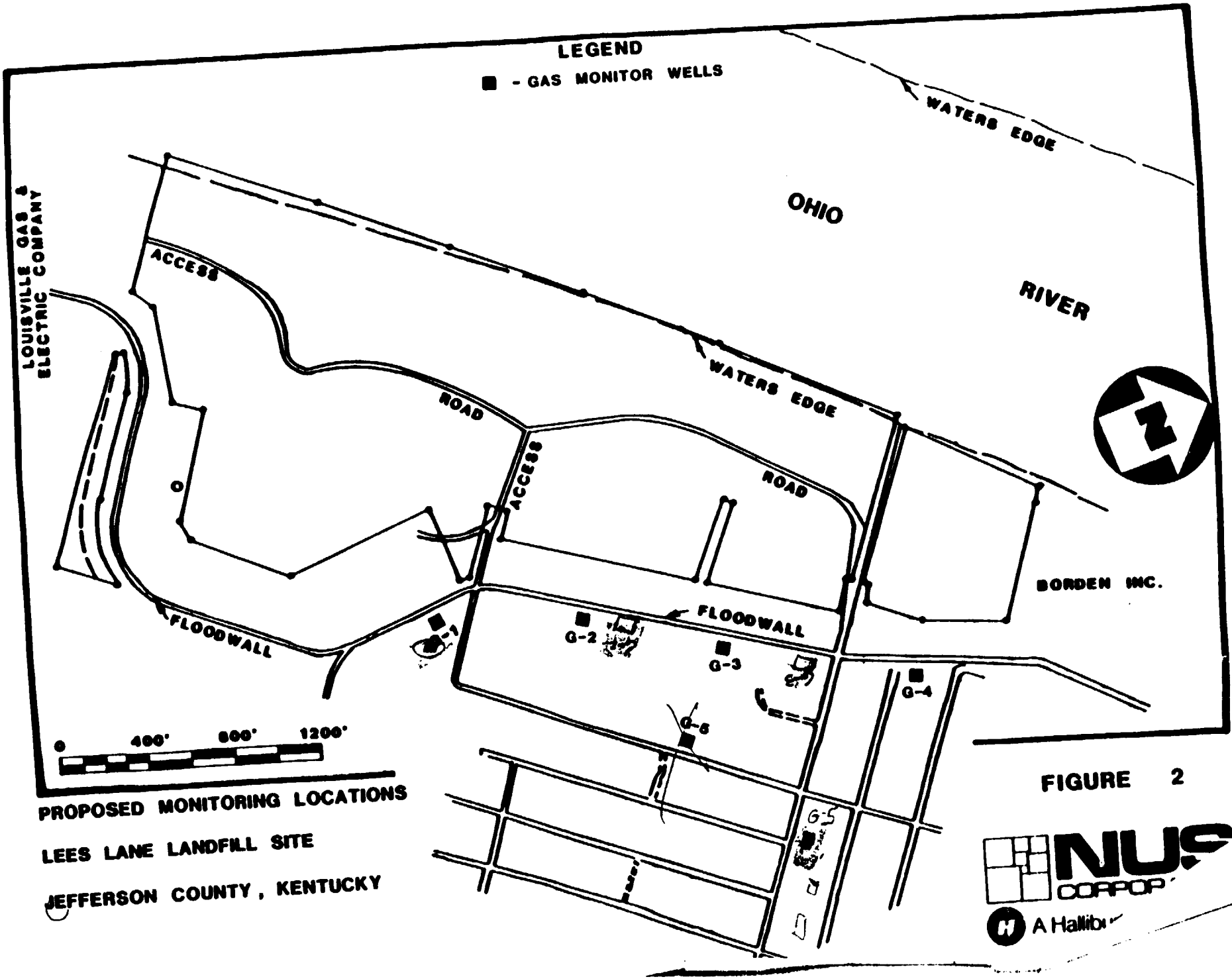
A.2 Site Description

A.2.1 Site Description

The site is located in a residential area adjacent to the Ohio River in Jefferson County, Kentucky. The exact location of the study site is shown in Figure 1.

A.2.2 Location of Monitor Wells

The approximate location of each monitor well assembly is shown in Figure 2. The exact locations will be determined by the onsite EPA Representative. Construction details are describedin Section A.4.



PROPOSED MONITORING LOCATIONS

LEES LANE LANDFILL SITE

JEFFERSON COUNTY, KENTUCKY

FIGURE 2

NUS CORPOR

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A.2.3 Entrance

Entrance to the site shall be specified at the start-up of the work. The Subcontractor shall comply with directions from the onsite EPA Representative.

A.3 Site Geology

A subsurface investigation was conducted at the site during November and December 1984. The investigation was used to determine subsurface lithology through a drilling and sampling program and to provide groundwater sampling points through a well installation program. The geology encountered during the subsurface investigation at the Lees Lane Landfill Site consisted of Ohio River alluvium composed of a recent silt and clay layer up to 20 feet thick overlying glacial outwash, sand and gravel with intermittent clay lenses. The alluvium and outwash was found to range from 86 to 114 feet in thickness. The New Albany shale was encountered beneath the alluvium. The shale was cored for 5 feet at three different locations. The New Albany shale is of Devonian age and is reported to be 100 feet thick.

In 1945 the U.S. Geological Survey drilled and sampled a well in the Ohio River adjacent to the site. The depth of the River was reported to be 15 feet. The lithology encountered consisted of sand and gravel above shale bedrock. The sediments below the riverbed were reported to be 35.5 feet thick.

The alluvium exhibited a downward coarsening trend which is consistent with published reports for the area. Continuous clay and silt layers were found in the upper 10 to 20 feet and were thicker toward the Ohio River. Intermittent clay and silt was found throughout the lithology but no continuous layers were found below 20 feet that would give rise to more than one water-bearing zone.

The New Albany shale underlying the alluvium was black, fissile, and contained oil. Oil was visible when the cores were split and oil could also be seen in the drilling mud pan. The strike of the shale was found to be approximately N 25o E with the bedrock essentialy flat. The dip of the shale was approximately 8.3 feet per mile in the direction of the Ohio River.

A.4 Construction Details

Each location will contain two boreholes, one for a deep gas monitor well and one for a shallow gas monitor well. Table 1 gives the appropriate depth of each borehole.

Each well will consist of ten feet of perforated 2-inch ID schedule 40 PVC (screen). The diameter of the perforation cannot exceed 1/8-inch. Standard 2-inch PVC with 0.01 inch slots will be an acceptable alternative to the perforated PVC. Two-inch ID PVC casing will extend from the top of the screen to the surface. Each monitor well will be capped with a standard 2" ID Schedule 40 PVC cap. The cap will have two openings, one to allow for a piece of teflon tubing which will run the total length of the assembly and the second to allow for a shorter piece of teflon tubing. The two tube system will provide sampling of gases having densities greater than and lesser than air. In addition, the longer tube will also provide a convenient means of purging the well. The openings around both pieces of tubing will be sealed to make each assembly as air-tight as possible. The end of each piece of tubing will contain a stop valve (t-valve), to be used as an input for inert gas used to purge the system and/or as a gas collection connector. The gas monitoring well assembly is shown in Figure 3.

A.5 Qualifications of Subcontractor

The Subcontractor shall be held responsible, and payment may be withheld for damages to the wells.

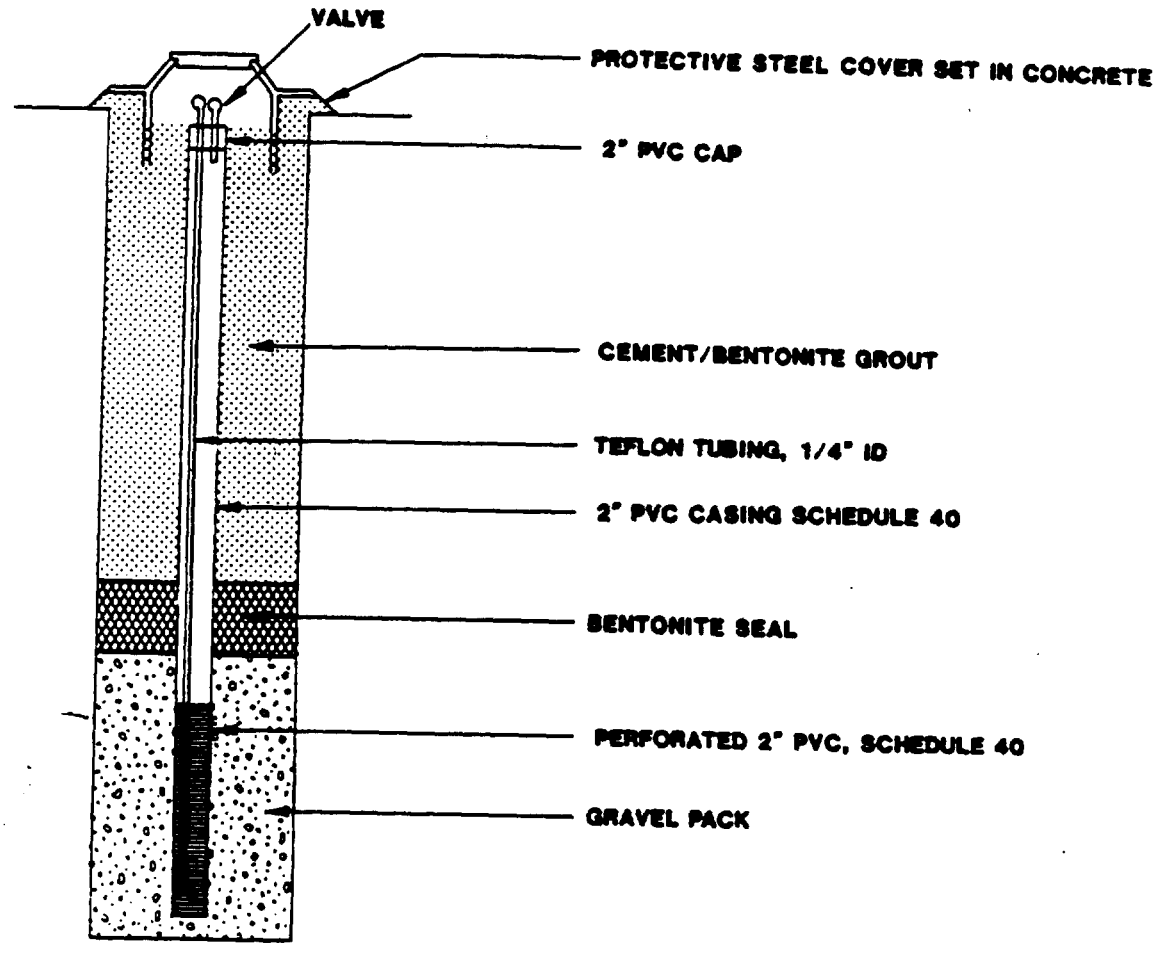
A.5.1 Equipment

Equipment in first-class working order must be provided. The Subcontractor shall use equipment having the minimum capabilities necessary to do the described work. All equipment must be listed on the enclosed equipment schedule (Table 2) and submitted with the bid package.

Table 1

Gas Monitor Wells
Approximate Borehole Depths

Well Number	Depth (Below Land Surface)
G-1D - Deep	40
G-1 - Shallow	15
G-2D - Deep	40
G-2 - Shallow	15
G-3D - Deep	40
G-3 - Shallow	15
G-4D - Deep	40
G-4 - Shallow	15
G-5D - Deep	40
G-5 - Shallow	15



GAS MONITOR ASSEMBLY DESIGN
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

FIGURE 3

NUS CORPORATION
A Halliburton Company

TABLE 2

"All Bidders Are Requested To Complete And Submit This Form With Your RFQ

Equipment Schedule

Rig Proposed	Make	Model	Age	Mast Load Capacity	Rotary Table Diam. & Capacity @ 100 rpm	Size & Age of Drill Pipe	Condition	Where Located

Attending equipment proposed: Give type, make, model, condition, and other pertinent data.

Bidder shall state whether equipment proposed is owned by him. He shall also advise if the required expert crews are in his employ.

A.5.2 Equipment Failures

No unnecessary delays or work stoppages will be tolerated because of equipment failure. These will not be considered as valid reasons for extending the length of the contract.

In the event that a work stoppage occurs due to an equipment failure, the Subcontractor shall either make the necessary repairs or provide, at his own expense, other equipment capable of performing the work.

A.5.3 Lower-tier Subcontractors

If lower-tier drilling Subcontractors are to be employed, they must comply with all applicable Specifications in this document. A statement signed by the lower-tier Subcontractor documenting that he has read, understands, and can and will comply with all Specifications, as written, is required prior to the start-up of any work.

A.6 Drilling Services

A.6.1 Permits

The Subcontractor shall procure all permits, certificates, and licenses required by law to execute the work described herein. Copies of the above must be provided to the EPA prior to commencement of work.

A.6.2 EPA Oversight

The Subcontractor shall provide drilling and well construction services under the inspection of an onsite EPA Representative.

A.6.3 Drilling Rig(s)

The Subcontractor shall provide a drilling rig capable of drilling down to a depth of 40 (± 10 ft) feet.

A.6.4 Driller and Driller's Helpers

The Subcontractor shall provide the necessary driller(s) and driller's helper(s). The Subcontractor shall employ only competent, experienced workmen for execution of the work.

A.6.5 Scheduling

Scheduling for all work to be performed will be at the discretion of the EPA Representative on site. The Subcontractor shall be equipped to perform any work described herein when deemed necessary by the EPA Representative on site.

A.7 Materials

A.7.1 Screen Pack Material

If formation materials do not collapse around the well screen, an artificial gravel pack shall be installed to a level approximately one foot above the top of the well screen. The gravel pack shall consist of washed gravel 0.2 - 0.3 inches in diameter.

A.7.2 Bentonite Seal

Bentonite pellets of a commercial grade and approved by the EPA Representative shall be placed on top of the screen pack to a thickness of approximately 24 inches. The exact thickness of the seal must be approved by the onsite EPA Representative. De-ionized water shall be used to hydrolize the pellets.

A.7.3 Grout

Grout shall be installed from the top of the bentonite seal to the ground surface. the grout shall consist of a mixture of bentonite (prehydrated) and Portland cement (Type 1). The grout/bentonite/water ratio shall be as follows: 1 bag cement (94 lbs)/2 lbs. bentonite/8 gallons water.

A.7.4 Well Casing

The monitoring well casings shall consist of 2-inch diameter, schedule 40 PVC with threaded flush joints. No grease, oil, or other petroleum-based material will be applied to the threads. All threads will be wrapped with teflon tape.

A.7.5 Screens

The well screen shall consist of 2-inch diameter (1/8 inch perforated or 0.010-inch machine-slotted), schedule 40, PVC with bottom caps. Screens shall be attached to each well casing using a screw-type flush-joint. No grease, oil, or other petroleum-based material will be applied to the threads. All threads will be wrapped with teflon tape.

A.8 Drilling Operations

The boreholes can be drilled by any method capable of putting in, at a minimum, a 4-inch ID hole. The drill rig must be able to drill to a 40- ($\pm$10 feet) foot depth. The exact depths of the boreholes will be determined by the EPA Representative onsite.

A.9 Monitor Well Assembly Installation

The deep wells will be set at a depth above the previously determined water table. The annular space between the well assembly and borehole wall will be measured to determine any formation collapse around the screen. Washed gravel (0.2-0.3 in. diameter) will be added to the annular space to a level approximately 1-foot above the top of the screen. Total formation collapse and gravel pack will not extend higher than 2 feet above the top of the screen and will be determined using a measuring tape. A two-foot bentonite pellet seal, followed by a tremmied cement/bentonite slurry to land surface will be installed on top of the gravel pack. A protective steel casing with locking cap will be cemented in place. The outside of the protective casing above ground will then be painted orange and labeled to distinguish these wells from the groundwater monitor wells.

A.10 Disposal of Drilling Wastes

At each drilling location, a shallow pit will be constructed, if necessary, to control all drilling wastes generated by drilling. Following the well installation operations, each pit will be backfilled and returned to approximate original conditions.

A.11 Health and Safety Information

Based on the nature of the facility operations, an organic vapor analyzed (OVA) or HNU unit and an explosimeter will be used for continuous monitoring during drilling. A complete Health and Safety Plan, including detailed information on suspected contaminants and emergency procedures will be reviewed with all parties prior to the commencement of the project and posted onsite for the duration of the project.

A.12 Decontamination and Cleaning

Specific decontamination and cleaning procedures will be outlined and conducted by the subcontractor then confirmed by the EPA Representative prior to the commencement of work.

A.12.1 Personnel

All personnel will be decontaminated prior to leaving any controlled areas as defined onsite by the EPA Representative. Temporary decontamination areas may be required at each boring location. The subcontractor will supply tap-quality water obtained from an approved off-site source, brushes, polyethylene sheeting, and distilled water. The personnel decontamination procedure shall be as follows:

a. Rinse with tap-quality water and brush to remove visible solids.
b. Wash with soap and tap water and rinse.
c. Rinse with distilled water.

A.12.2 Equipment

All drilling equipment will be decontaminated under the supervision of the EPA Representative at job start-up and before final exit from the site. Temporary

decontamination areas at a location determined by the EPA Representative will be required at each boring location. Equipment and personnel will be decontaminated in the same areas. The subcontractor will supply pressurized steam cleaning equipment, brushes, hose, polyethylene sheeting, metal pipe stands, and any other equipment and materials as needed. Equipment and material to be decontaminated include: drilling rig, drill rods, bits, tubs, water tank, hoses, pipes, well screens, well casing, sampling equipment, and any other equipment or material deemed necessary by the EPA Representative. Equipment used to store or apply decontamination solutions must be constructed or lined with stainless steel or teflon. All tubing used to apply the solutions must be 100% Teflon or teflon-lined. There will be no exceptions to this requirement. The equipment decontamination procedure shall be as follows:

a. Rinse with tap-quality water and brush to remove visible solids.
b. Wash with soap and water using a pressurized steam cleaner and brush.
c. Rinse with tap water.
d. Rinse with 2-Propanol (Pesticide-grade).
e. Final rinse with distilled water.

Operation of the borehole decontamination area will be at the direction of the EPA Representative in accordance with the site Health and Safety Plan.

A.13 Reporting Requirements

The Region IV EPA Representative will decide prior to commencement of the project what documentation will be required of the Subcontractors. Any information supplied to the EPA shall be provided in good order and shall be clear and legible. At a minimum, well construction logs will be maintained by the subcontractor. Submittal of all required information must be completed prior to final payment. All information shall be identifiable with the boring or well to which it relates.

A.14 Quality Assurance

The SUBCONTRACTOR shall submit their quality assurance (QA) program to the EPA for approval. The QA program must be approved before work can begin.

Any lower-tier subcontractors shall also be required by the SUBCONTRACTOR to adhere to the approved QA program, security plans, and requirements referred to under this Agreement. The SUBCONTRACTOR shall contact EPA for resolution of any exceptions taken to the QA and/or security plans prior to execution of the subcontract.

- Subcontractor personnel involved in project activities shall be trained in the procedures and methods applicable to their work. Training shall be documented.

- The subcontractor shall exert necessary control to insure that the services or products to be procured meet the appropriate QA requirements and shall report any changes, defects, or noncompliances to the EPA on-site field representative.

- Right of access to facilities, processes, and records shall be granted to EPA so that EPA can monitor subcontractor work and conduct surveillances and/or audits as deemed necessary. Subcontractors whose work does not meet the technical, cost, and quality specification in a timely manner will be issued a nonconformance to contractual requirements. Failure to rectify QA deficiencies to the satisfaction of EPA may result in termination of the subcontract.

- The subcontractor will correct at its own expense any deficiencies found during these audits and/or surveillances. The subcontractor will designate an individual or organization responsible for monitoring quality, interfacing with the EPA Quality Assurance Representative, and resolving matters relating to quality. The attached form has been provided to identify the person(s) responsible for these functions. The form also provides a Statement of Understanding to be signed by the subcontractor indicating understanding of the agreement to the Quality Assurance provisions of this contract.

- Final review and approval of activities performed under the subcontract shall be the responsibility of the Region IV EPA.

Subcontractors shall prepare and maintain sufficient records to furnish documented evidence of the validity of the quality of work and activities affecting quality, if necessary. Their invoices, permits, certifications, personnel qualification records, well drilling logs, analytical methods and procedures, and all other accountable documents that may be used for litigation purposes, shall demonstrate that the items or services

being procured meet the specified contractual requirements. All records shall be readily identifiable and retrievable and shall be made available to the client upon request.

IV. Health and Safety

The following general items must be understood:

1. EPA will develop a site-specific Health and Safety Plan. The subcontractor must, as a minimum, comply with the requirements of the Health and Safety Plan. A Health and Safety Plan including detailed information on suspected contaminants and emergency procedures will be reviewed and posted onsite.

2. The Subcontractor is responsible for providing protective clothing and disposable items, which include clothes, boots, respirator cartridges, disposable coveralls, and gloves. The Subcontractor shall provide appropriate certified air purifying respirators, and/or SCBAs (self-contained breathing apparatus), if necessary.

3. Subcontractor's officials are responsible within their jurisdictions for the implementation of the provisions of this Agreement, for assuring that funds are available for the required training and purchasing and maintaining respiratory protective devices, and for providing occupational medical monitoring.

4. Failure of the Subcontractor to adhere to the Health and Safety Plan or to comply with health and safety instructions from the EPA Representative will be grounds for EPA to discontinue work activity, at the Subcontractor's expense. EPA reserves the right to stop work and/or terminate the subcontract for Health and Safety reasons.

5. All personnel, involved in site activities or who may be required to wear respiratory protection, shall undergo a baseline medical examination at the expense of the subcontractor. Contents of the examination must be determined by the subcontractor's medical physician consultants. The subcontractor must provide his medical consultant with adequate information on the work to be done by each employee and site hazards to enable an evaluation of fitness to be made. The examination must include an OSHA type evaluation of the worker's ability to use respiratory protective equipment. Personnel who have undergone the medical examination and analyses within the past year will not need to be reexamined. A

letter is required **PRIOR** to start of work from the subcontractor's medical consultant to the EPA Project Manager certifying the medical fitness of each person to perform his duties and to wear respirators. Personnel will have medical testing at the completion of their site activities, if required by the subcontractor's medical consultant to protect their health. Personnel with known exposures or who become unexpectedly ill must be reexamined. The subcontractor's medical consultant will determine the need for reexaminations during the investigation phase of the project. The subcontractor's medical consultant in conjunction with the EPA Site Health and Safety Officer (SHO) will determine the need for medical care in the case of field exposure or illness.

V. Health and Safety Training

These health, safety, and training specifications are designed to establish general procedures and practices for EPA and Subcontractor personnel involved in drilling.

VI. Purpose and Scope

EPA has established a comprehensive health, safety, and training program for all field activities, particularly those which have the potential for chemical exposures. The program is intended to provide adequate procedures, protective gear, monitoring, and follow-up to protect the health of EPA, its representatives, and the Subcontractor, as well as the public near our work sites.

This program is driven by the requirement to comply with Federal and State Occupational Safety and Health Act (OSHA) regulations, the need to minimize the risk of adverse health effects from exposure to work hazards, and the savings inherent in safe work activities. In this regard, all standards, training requirements, medical monitoring, and employee protection requirements for workers engaged in hazardous waste operations, as proposed under 29 CFR 1920/51FR456654, December 19, 1986, must be met.

A Site Health and Safety Officer (SHO) is assigned to evaluate site hazards; develop the health, safety, and training requirements; and provide on-site monitoring of work activities. The SHO is authorized to direct site activities as needed to provide for the safety and health of all involved. This includes modifying or halting all activities as needed to make sure safety plans and other requirements are fulfilled.

PRICE QUOTATION FORM

Item Description		Total Cost
I.	Mobilization/Demobilization	_____
II.	Borehole drilling	_____
III.	Gas Monitor Well Materials (to include screen and casing)	_____
IV.	Monitor Well Construction Labor	_____
V.	Decontamination Labor	_____
VI.	Decontamination Materials	_____
VII.	Stand-by Time	_____ /hr.
Total Cost (Excluding Item VII)		_____

Prior to the commencement of any field activities, the Subcontractor will be advised of the EPA Health and Safety Plan for the subject project. The Subcontractor shall strictly comply with all articles of this Health and Safety Plan. Failure to comply with this plan by the Subcontractor or the Subcontractor's employees shall be cause for stopping the work at the expense of the Subcontractor.

During the performance of work under this Subcontract, the Subcontractor shall, at a minimum, satisfy all Federal, State, and local statutes, regulations, ordinances, etc., regarding health and safety. The Subcontractor is responsible for insuring that his employees satisfy all health and safety requirements as well. The Subcontractor shall also document that personnel assigned to the project meet all applicable OSHA training and medical monitoring requirements as provided in 29 CFR 1910.

Only personnel currently or capable of meeting these requirements will be eligible for project work. As noted in the regulations, appropriate training and medical monitoring records must be kept to assist in future employee evaluations. Copies of records insuring compliance to the regulation shall be submitted to EPA with other requested documents at the time the response to this agreement. Beyond this minimum requirement, the Subcontractor shall comply with EPA Health and Safety Plans particular to the site.

VII. Period of Performance

It is essential that the work requested in this solicitation be completed in as short a time as possible, as the data developed from subsequent studies by the EPA will be of significant importance in developing the conclusions for the site. As a result, weekend work may be required. For weekend work, the Subcontractor will be reimbursed at the quoted labor rate.

The period of performance of the work described in this solicitation is two (2) weeks. The Subcontractor shall have all equipment and personnel available to be on the site within six days after notification by the EPA to proceed.

STATEMENT OF WORK AND TECHNICAL SPECIFICATIONS
FOR
DRILLING SERVICES

LEES LANE
JEFFERSON COUNTY, KENTUCKY

SEPTEMBER 1987

EPA Region IV

1.0 INTRODUCTION

1.1 Site Description

The Lees Lane Landfill Site, a tract of land of approximately 112 acres, is located along the Ohio River in Jefferson County, Kentucky. The landfill is approximately 4.4 miles southwest of Louisville, Kentucky (Figure 1). A location reference point for the landfill is the intersection of Lees Lane and the flood protection levee. This point is located at 38°11'44" N latitude and 85°52'17" W longitude. The site is approximately 5,000 feet in length, averages approximately 1,500 feet in width and consists of three tracts of land designated as the Northern, Central, and Southern Tracts (NUS, 1983a).

The Northern and Central Tracts of the landfill consist of level to gently sloping land. The Southern Tract contains two steep-sided excavations. Up to three terraces, each approximately 20 feet wide, comprise portions of the slope on the river side of the landfill. Elevations range from 383 to 410 feet above mean sea level (amsl) along the Ohio River to 461 feet amsl along the levee.

The topography of Lees Lane Landfill has been determined mainly by the extensive man-made excavation and fill operations at the site. A secondary, but major influence of the topography has been the erosional and depositional processes of the Ohio River. The landfill is located in the Ohio River Terraces physiographic province.

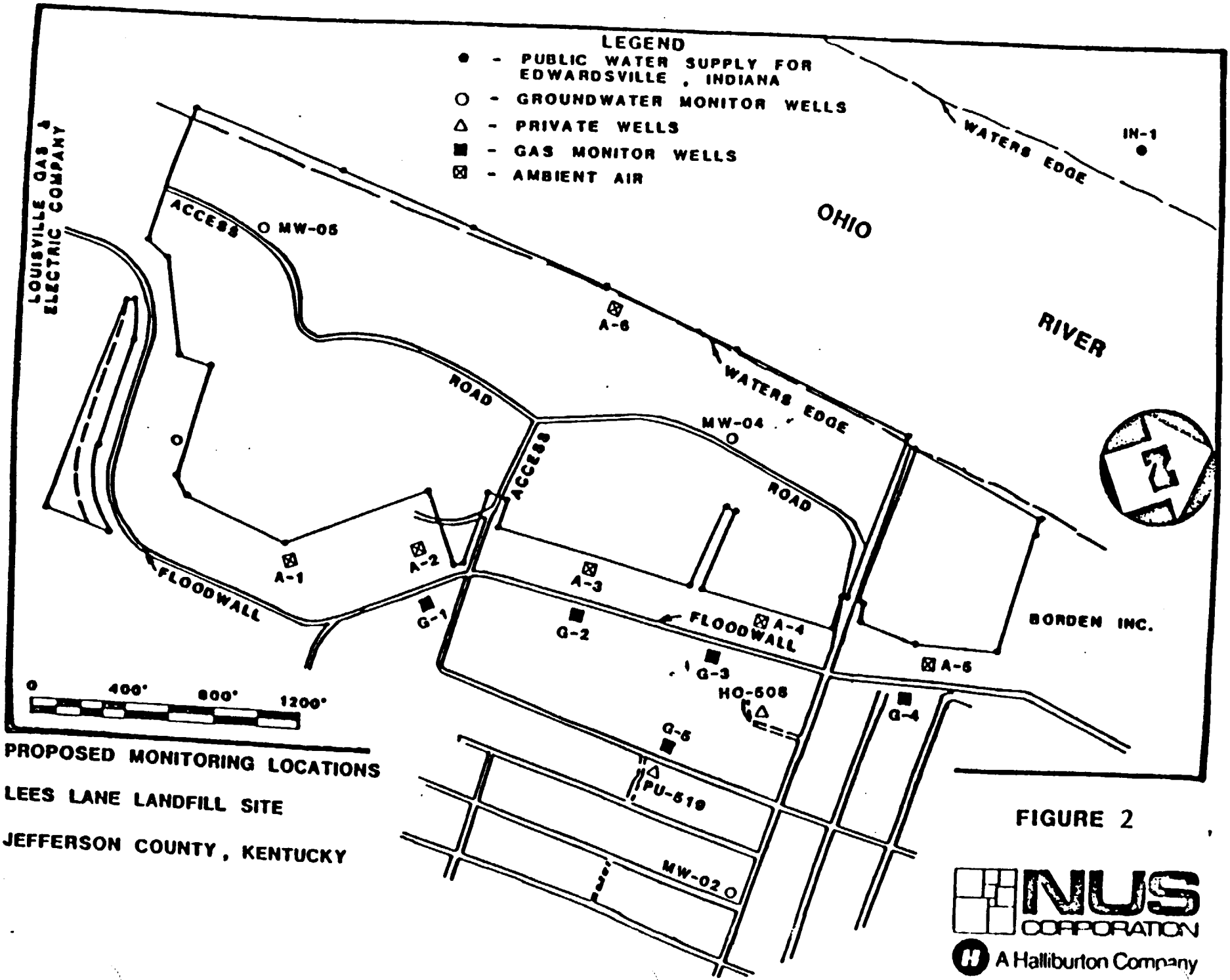
The site is bordered on the east and south by the Army Corps of Engineers flood protection levee. To the northeast is Borden, Inc. (a chemical manufacurer), to the south is Louisville Gas and Electric Cane Run Plant (a coal burning generating station), and to the east is Riverside Gardens (a residential development of about 330 homes and 1,100 people). The west side of the site has a narrow, terraced area which serves as a buffer zone between the landfill and the Ohio River. A gas collection system has been installed along the property boundary to the southeast of the site between the landfill and Riverside Gardens (see Figure 2).

1.2 Regional Geology

The consolidated materials underlying the Louisville, Kentucky area are composed of limestone and shale of Silurian, Devonian, and Mississippian age. The bedrock formations in the area are of fairly uniform thickness and dip toward the southwest at about 40 feet per mile. West and southwest of Louisville, the bedrock surface consists of the New Albany shale of Devonian age (Bell et al, 1963).

During Pleistocene time the Ohio River cut its valley into the limestone and shale to a maximum depth of nearly 130 feet below the present flood plain. The valley was later filled to its present level with glacial-outwash sand and gravel, and river deposits of Pleistocene and Recent age (Bell et al, 1963).

The deposits of Pleistocene age include the glacial-outwash sand and gravel ranging from 0 to 100 feet in thickness, overlain by a



PROPOSED MONITORING LOCATIONS

LEES LANE LANDFILL SITE

JEFFERSON COUNTY, KENTUCKY

FIGURE 2

NUS CORPORATION

A Halliburton Company

blanket of silt and clay as much as 40 feet thick. Very thin deposits of Recent clay and silt cover portions of the floodplain. The sand and gravel deposit is thinnest in the northwestern part of Louisville; the silt and clay is thickest near the Ohio River (Bell et al, 1963).

1.3 Site Geology

A subsurface investigation was conducted at the site during November and December 1984. The investigation was used to determine subsurface lithology through a drilling and sampling program and to provide ground-water sampling points through a well installation program. The investigation consisted of five boreholes at four different locations.

The geology encountered during the subsurface investigation at the Lees Lane Landfill Site consisted of Ohio River alluvium composed of a recent silt and clay layer up to 20 feet thick overlying glacial outwash, sand and gravel with intermittent clay lenses. The alluvium and outwash was found to range from 86 to 114 feet in thickness. The New Albany shale was encountered beneath the alluvium. The shale was cored for 5 feet at three different locations. The New Albany Shale is of Devonian age and is reported to be 100 feet thick (EPA, 1982).

In 1945 the U.S. Geological Survey drilled and sampled a well in the Ohio River adjacent to the site (USGS, 1945). The depth of the river was reported to be 15 feet. The lithology encountered consisted of sand and gravel above shale bedrock. The sediments below the riverbed were reported to be 35.5 feet thick.

The alluvium exhibited a downward coarsening trend which is consistent with published reports for the area. Continuous clay and silt layers were found in the upper 10 to 20 feet and were

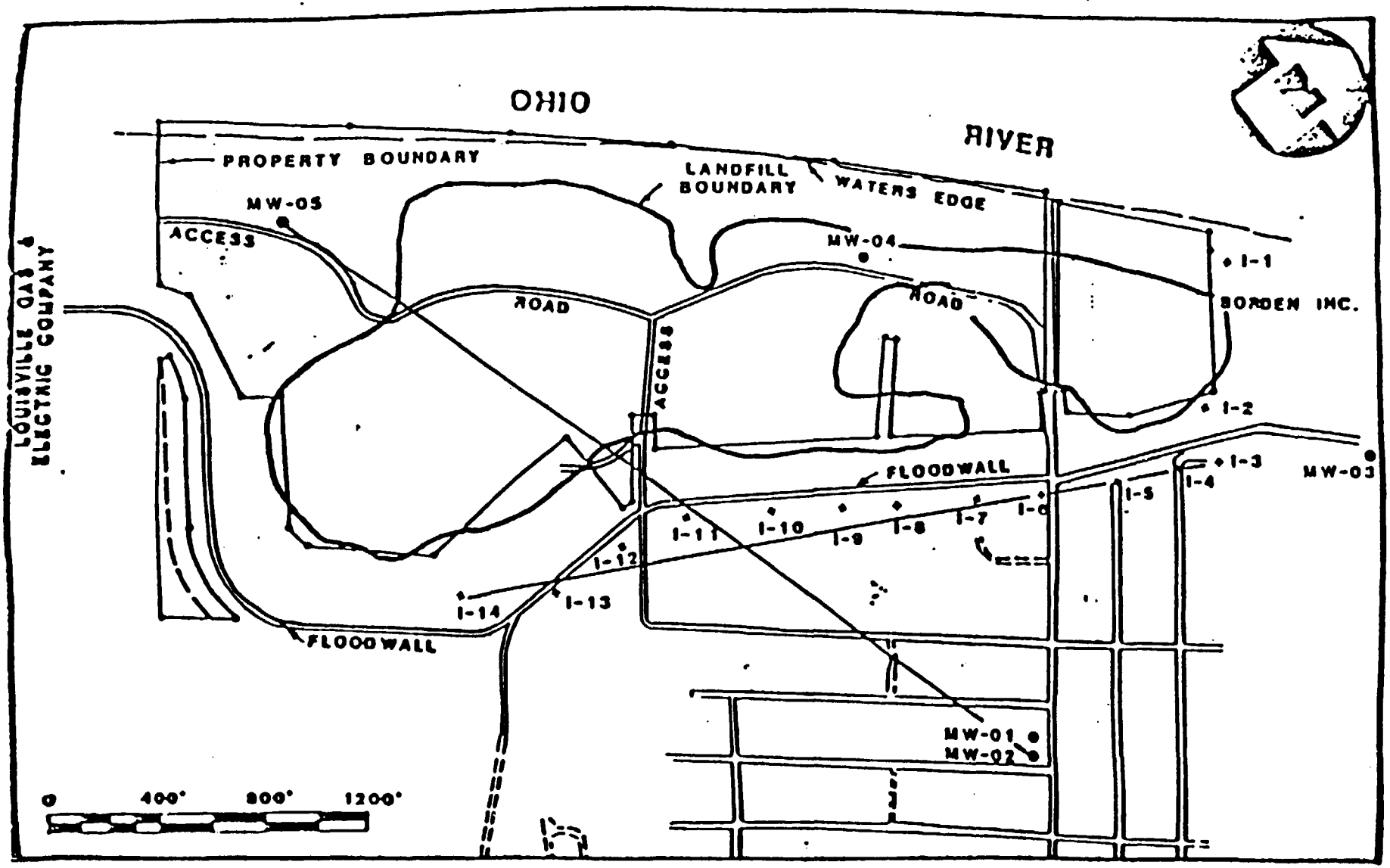
thicker toward the Ohio River. Intermittent clay and silt was found throughout the lithology but no continuous layers were found below 20 feet that would give rise to more than one water-bearing zone.

The New Albany shale underlying the alluvium was black, fissile and contained oil. Oil was visible when the cores were split and oil could also be seen in the drilling mud pan. The strike of the shale was found to be approximately N 25° E with the bedrock essentially flat. The dip of the shale was approximately 8.3 feet per mile in the direction of the Ohio River.

Cross-sections have been drawn to illustrate the geology on and around the site. Figure 3 is a location map for the cross-sections. The cross section I-14 to I-3 shown on Figure 4 runs parallel to the flood levee and was developed using well logs from gas monitor wells installed by SCS Engineers in 1978. An additional cross-section MW-02 to MW-05, running from the upgradient well to the Ohio River through MW-05 is shown on Figure 5. This cross-section was developed to illustrate the lithologic units as well as to show the relationship between Ohio River water levels and ground-water levels during high flow periods.

1.4 Soils

The natural soils in the area consist of the Wheeling-Weinback-Huntington Association located in the Ohio Valley. The association consists of very broad, nearly level ridges that have



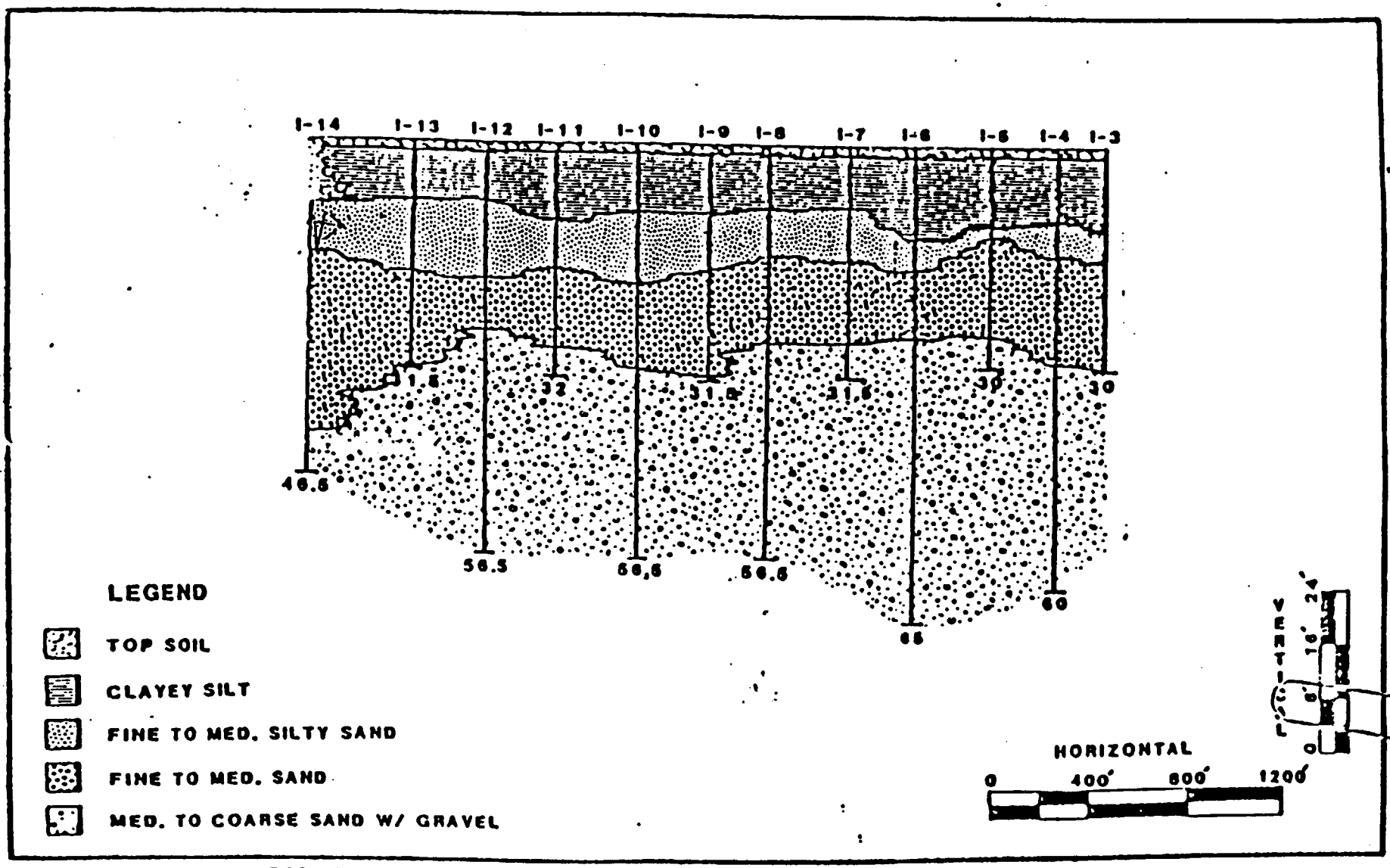
LOCATION OF CROSS-SECTIONS
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

LEGEND

- GROUNDWATER MONITOR WELLS
- GAS MONITOR WELLS

FIGURE 3

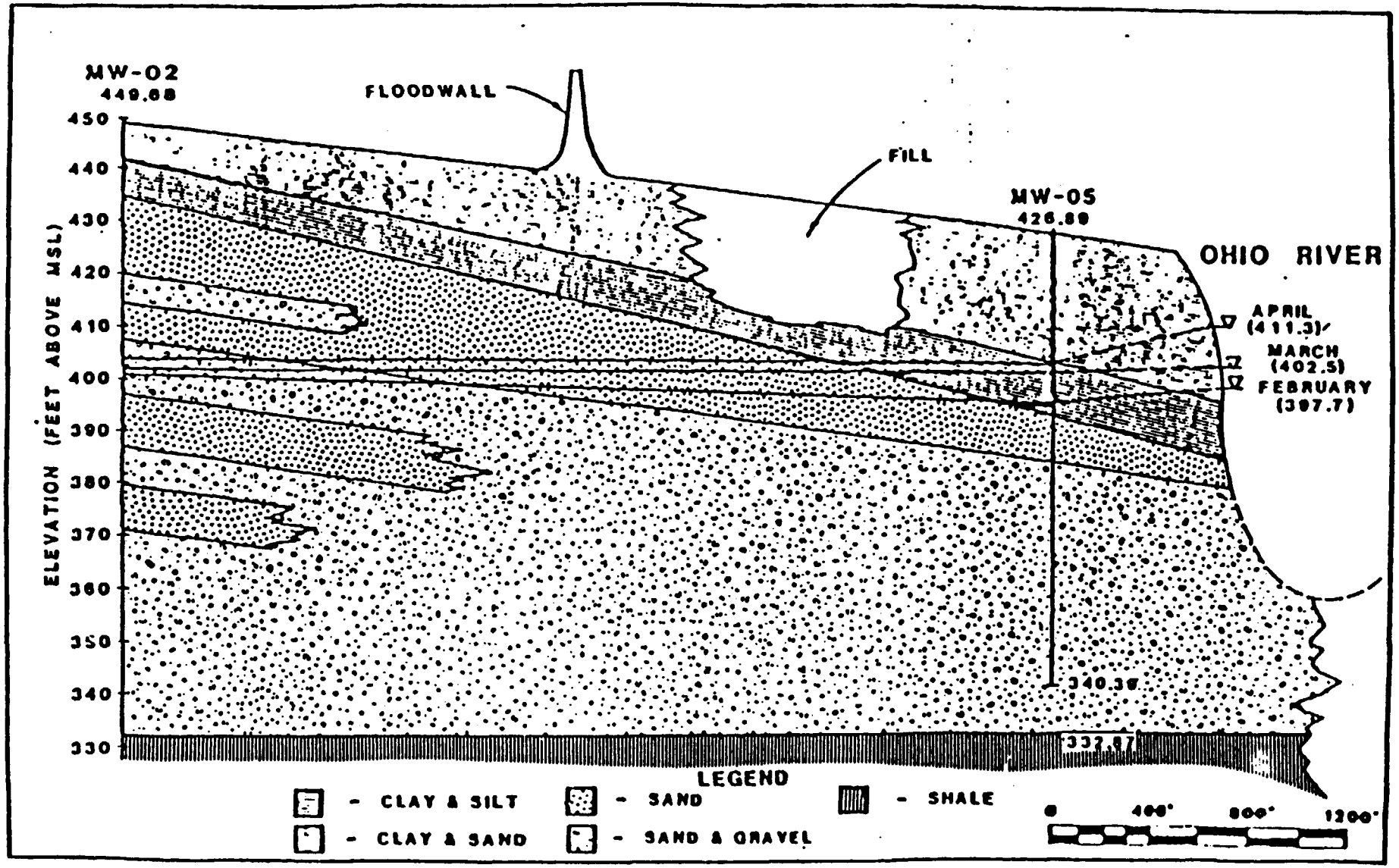
NUS CORPORATION



CROSS-SECTION I-14 - I-3
LEES LANE LANDFILL SITE
JEFFERSON COUNTY , KENTUCKY

FIGURE 4

PHNUS



CROSS-SECTION MW-02 - MW-05

LEES LANE LANDFILL SITE

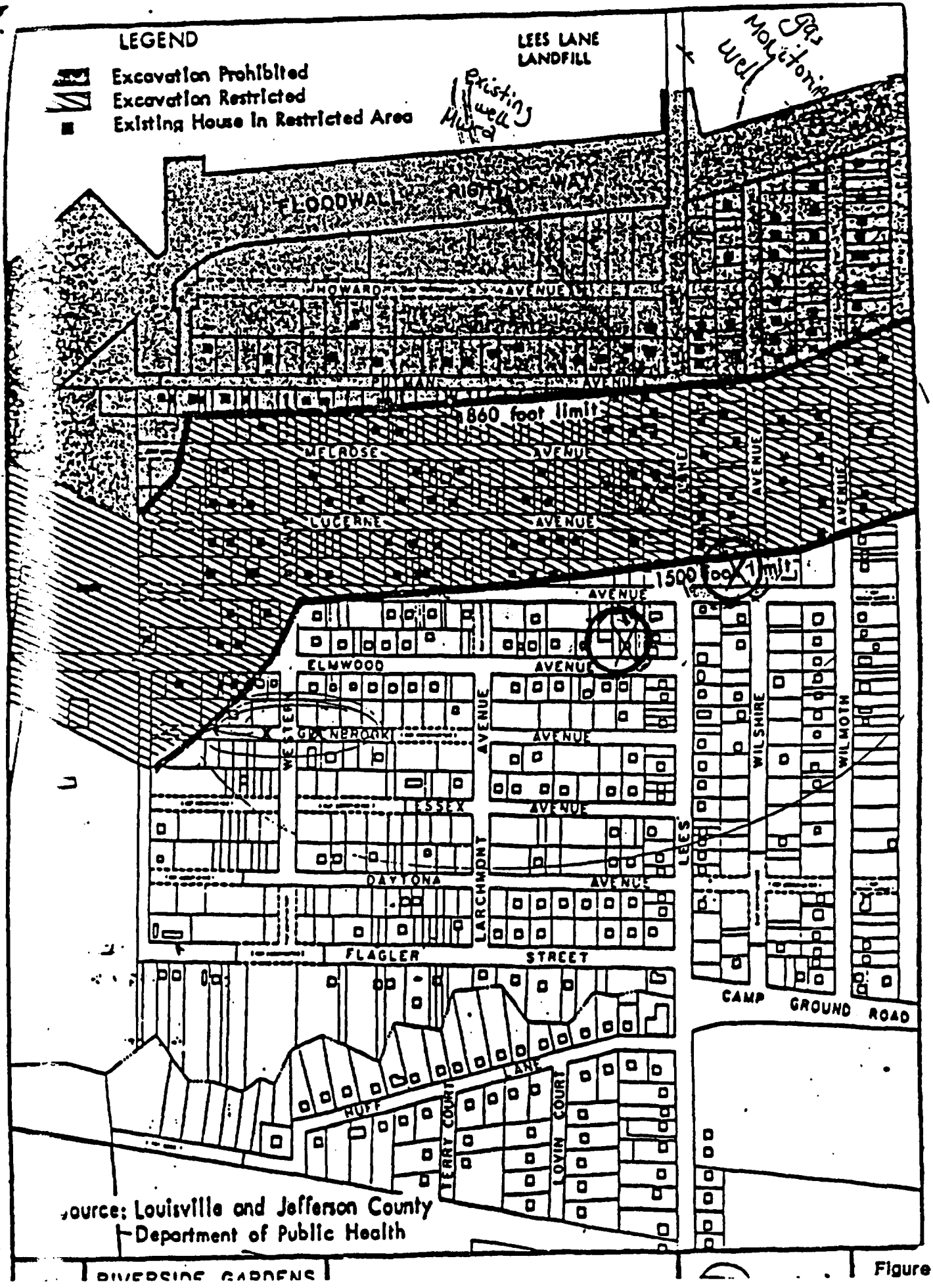
JEFFERSON COUNTY, KENTUCKY

FIGURE 5

NUS CORPORATION

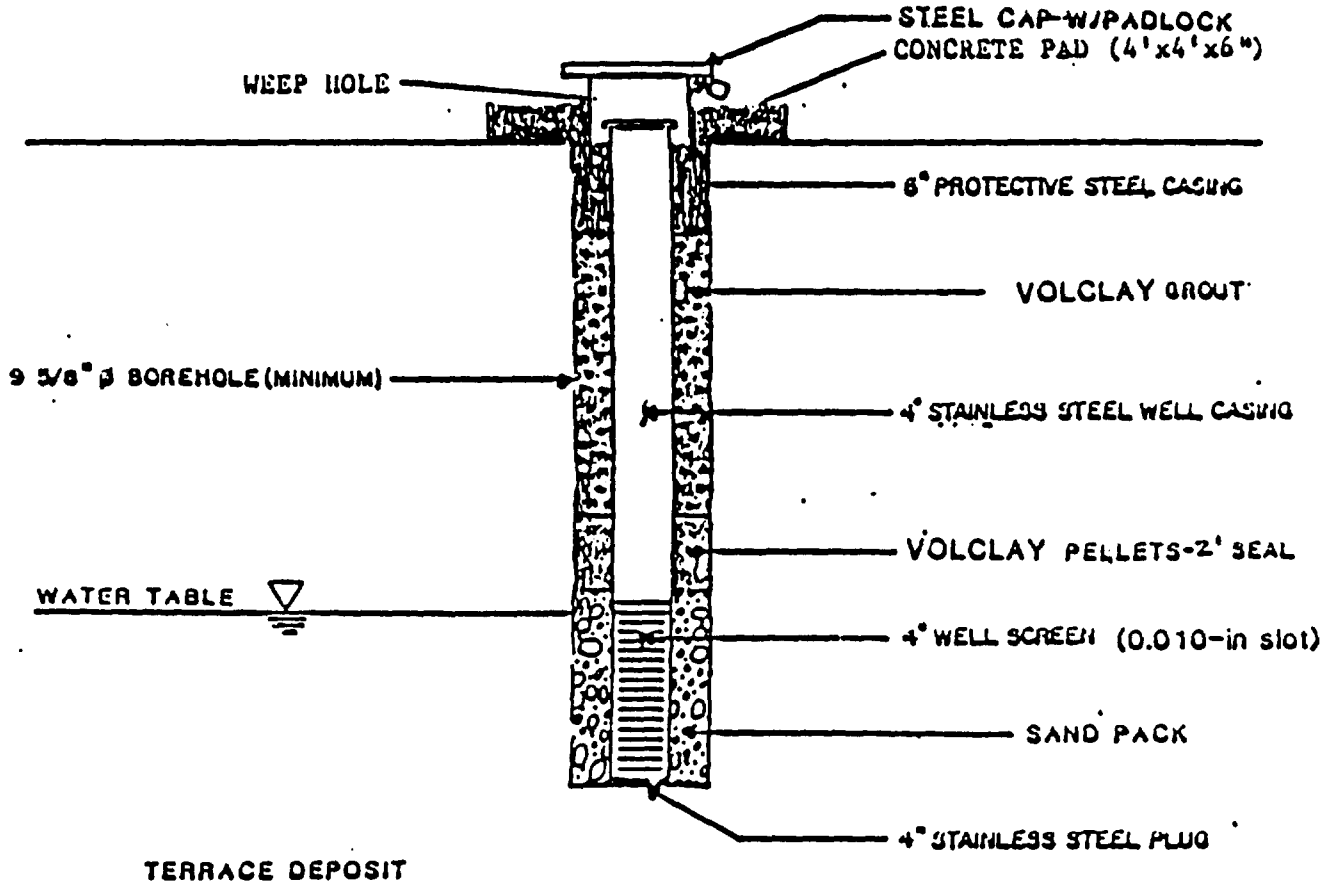
narrow side slopes running down to the bottoms along small branches. These branches are mostly parallel to the Ohio River and form a dominant drainage pattern. This association consists of long narrow strips that are parallel to the drainage system and ranges from half a mile wide along the northern edge of the county to more than 4 miles wide in the western side. The total acreage is about 14 percent of the County (Zimmerman, 1966).

Wheeling, Weinbach and Huntington soils each cover about 25 percent of this Association. Newark soils cover 10 percent, and the other minor soils about 15 percent. The minor soils present at the site consist of the Sciotoville soils and breaks and Alluvial land (Zimmerman, 1966).



Source: Louisville and Jefferson County Department of Public Health

Figure 6.



TYPICAL PROPOSED SHALLOW MONITORING WELL CONSTRUCTION

FIGURE 7

2.0 SCOPE OF WORK

The Lees Lane Site will require a drilling program to assess and determine if the shallow groundwater is contaminated with metals and benzene previously placed in the landfill. Two monitoring wells will be required to obtain specific information to evaluate the site.

Approximate locations of the drill holes are shown on Figure 6. Some locations may be changed at the discretion of the EPA field representative.

2.1 Technical Specifications for Drilling Operations

All monitor wells will be installed and constructed to meet state and local regulations. An EPA representative will observe all drilling operations, decontamination procedures, and placement of monitor wells.

Mud rotary is the chosen method of drilling. The wells shall be constructed with stainless steel wire-wrapped screen (0.010-in slots) and threaded flush joint riser pipe extending 2-ft, 6-in above surface. All wells will have a threaded plug on the bottom of the screen, a vented threaded cap and protective casings.

The wells are expected to be 40 to 50 ft deep. These wells are to be screened in the gravel layer shown in Figure 4.

During drilling of the wells, split-spoon samples will be taken at each lithology change, as directed by the site geologist. The driller is expected to supply two split spoons.

The wells will have approximately 10-ft of 4-in diameter screen and the threaded flush joint riser will extend to approximately 2-ft, 6-inches above the surface. An 8-in borehole is necessary to accomodate the 4-in casing and screen. A 25 to 30 mesh silica sand pack will be placed in the annulus to a depth of at least 1 ft above the screen. A 2 ft Volclay seal will be placed above the sand pack. Volclay grout will be added to fill the annulus above the seal to within 2 ft of land surface. Protective casing with locking cap will be cemented into place and permanently identified. The driller is to supply all well materials. A diagram of typical well construction is included in Figure 7.

All wells will have protective casings with vented, hinged, locking well cover and 4-ft square concrete (4-ft square by 6-in thick) pads and permanent I.D. tags.

The tremie tube method shall be used to place the filter pack, Volclay pellets and Volclay grout in the wells.

Drilling contractor shall supply a stainless steel holding container (truck or trailer mounted) of at least 3,000-gallon capacity for potable drilling water. This holding container shall be clean and free of all foreign matter and will be subject to the on-site decontamination procedures and quality control protocols. A sample of water from this holding tank will be submitted for analysis. The driller will provide portable mud tanks of sufficient size to contain all drilling fluids and prevent spillage. All drillilng fluids will be left on site. However,

in the event that this is not permissible, the driller should be prepared to remove drilling fluids from the site at the completion of the project.

2.1.1 Decontamination

All decontamination of drilling equipment will be performed by the driller (Appendix A). The driller will be required to have on site two sets of down hole drilling equipment (auger flites, bits, etc.) and sampling equipment (split-spoons) to decrease standby time during the drilling operation.

When sampling equipment is used to collect samples that contain oil, grease or other hard to remove materials, it may be necessary to rinse the equipment several times with pesticide grade acetone or hexane to remove the materials before proceeding with site decontamination procedures. If down hole drilling equipment is painted, badly rusted, or coated with materials that are difficult to remove, it will be required to steam clean, wire brush, or sandblast the equipment before proceeding. This is to be performed before mobilization to the job site. Any sampling equipment that cannot be cleaned using these procedures should be discarded. The driller will follow directions of on-site geologist and decontamination team as to when, where and how decontamination is accomplished.

Normally, any portion of the drill rig, backhoe, etc. that is over the borehole (Kelly bar, or mast, backhoe buckets, drilling

platform, hoist or chain pulldowns and/or cathead, etc.) must be steam cleaned and wire brushed before being brought on site to remove all rust, soil and other material which may have come from other hazardous waste sites. All downhole drilling equipment (bit, stem, etc.) is to be sandblasted prior to mobilization to the site. The drill rig should then be inspected to insure that all oil, grease, hydraulic fluid, etc. has been removed, all seals and gaskets are intact and no fluids are leaking. Steam cleaning of the drill rig is then required prior to drilling each borehole. In addition, all downhole drilling, sampling, and associated equipment that will come into contact with the downhole equipment and sample medium shall be decontaminated by the following procedure:

1. Clean with tap water and laboratory grade detergent, using a brush, if necessary, to remove particulate matter and surface films. Steam cleaning may be necessary to remove matter that is difficult to remove with the brush.

2. Rinse thoroughly with tap water.

3. Rinse thoroughly with deionized water.

4. Rinse twice with solvent (pesticide grade isopropanol).

5. Rinse thoroughly with organic-free water and allow to air dry as long as possible. If organic-free water is not available, allow the equipment to air dry as long as

3. Rinse thoroughly with deionized water.

4. Rinse twice with solvent (pesticide grade isopropanol).

5. Rinse thoroughly with organic-free water and allow to air dry as long as possible. If organic-free water is not available, allow the equipment to air dry as long as possible. Do not rinse with deionized or distilled water.

   NOTE: Organic-free water can be processed on site by purchasing or leasing a mobile deionization-organic filtration system.

6. Wrap with aluminum foil, if appropriate, to prevent contamination if equipment is going to be stored or transported.

7. As previously stated for the drill rigs and other heavy equipment, all downhole augering, drilling and sampling equipment shall be sandblasted before Step #1 if there is a buildup of rust, hard or caked matter and/or painted equipment. All sandblasting shall be performed prior to arrival on site. All equipment shall be subject to inspection by EPA upon arrival on site.

2.1.2 Plugged and Abandoned Wells

If any boreholes are deemed unsuitable for monitoring installation by the on-site geologist, the driller will plug and abandon the borehole as required by state regulations or as directed by the EPA geologist.

2.2 Monitor Well Development

All installed wells shall be adequately developed prior to initial sampling efforts. Adequate development should eliminate all fine material from the area of the well screen, and allow for the collection of a sample which is free of suspended materials and is visibly clear. Wells installed by "wet drilling", where drilling muds are used, will be developed so that residual drilling muds will not settle around the well screens or in the surrounding soil and contaminate future sampling.

Various methods may be used to develop wells. These methods consist of pumping, bailing, compressed air, using plunging-surging, etc. All drilling fluids and ground water from the installation and development removed from the wells will be left on site. However, the driller must be prepared to remove these materials from the site in the event it should be necessary.

2.2.1 Boring Log

The purpose of this log is to provide EPA with a record of the dimensions of the hole, drilling methods used, any drilling

problems encountered, and the general character of the subsurface material penetrated. The log will include the following:

a. Well or boring number

b. Name and address of the Subcontractor (driller).

c. Dates and times of starting, stopping and completion of the boring.

d. Name of the driller and driller's helper(s).

e. Diameter and depth of boring and record of casing.

f. Make and type of equipment used, including methods of advancing the hole and obtaining samples.

g. Data for each split-barrel sample required, including blos and depth of refusal.

h. Drop and weight of hammer used to push sampling equipment.

i. Data for each undisturbed sample (Shelby Tube).

j. Data on rock coring as described elsewhere.

k Descriptions of all soil and rock strata encountered with the driller's best estimate of the depths at which changes in material occur.

l. Descriptions of water levels and drilling fluid behavior.

m. Observations of any unusual drill tool behavior.

n. Dates, times, and depths of groundwater observations.

o. All information where specified in the solicitation.

The driller will also keep a record of the construction design, materials, and amounts of materials used in each monitoring well. This will include diameter of casing, depths and lengths of all wellscreens, type of screen pack, and location of screen packs. Other data may be requested by the EPA. This record will be due at the completion of the project.

2.2.2 On-site Waste Storage and Disposal

At the direction of the EPA representative and in compliance with all federal, state, and local rules, regulations, and permit requirements, any and all wastes which have been generated due to this contract may be left on the site. Wastes which are deemed as non-hazardous may be disposed of at the place of origin.

2.2.3 Site Cleanup

Upon completion of all work described in these specifications and after decontamination, the driller shall remove from the site all equipment brought by him to the site. The driller shall also remove from the site all containers, drums, tanks, debris, and unused materials, and restore the site as nearly as practicable to its condition prior to commencement of the work provided for herein. All walks, drives, utilities, structures, or other property damage due to the driller's negligence shall be restored at his expense to as nearly as possible their original conditions. Payment for work shall not be completed until the EPA representative approves the cleanup at the completion of the work.

2.2.4 Site Restoration

The drilling site shall be restored as close as possible to the original condition prior to drilling. No trash, fluid, or other foreign materials shall remain at drilling sites. Drilling sites will be restored immediately after completion of the borehole at

2.3 Bidding Requirements

All bids must be in unit form to include a unit-price breakdown equivalent to Figure 3-1. All payments will be on actual footages obtained in the field. All well materials will be supplied by the driller. The bidder must obtain all permits and legalities that are necessary from the proper authorities. The bidder shall have all the current and necessary licenses and registrations required by state and local authorities. All bids will be written under the assumption of work to be performed in Level D protection. If there is deviation from Level D, a surcharge, as noted on the price breakdown sheet, will be added to the bid prices.

2.3.1 Methodology

As part of his bid, the Bidder shall submit a written plan describing how the work will be performed. At a minimum, the plan should include the work methodology, classification of personnel who will do the work, personnel qualifications, a listing of equipment that will be used, and a work schedule.

2.3.2 Documentation of Experience

EPA reserves the right, in awarding the contract, to give such weight as deemed proper to the Bidder's experience records. The Bidder shall submit, with the bid, certification of the experience requirements listed below. The Bidder's proposal shall address the following experience records:

- Bidder shall have been engaged in work of similar character to that contemplated hereunder for a period of not less than 5 years (yr) immediately prior to the bid opening date. Bidder shall list the names of typical projects with a detailed description of the work performed (minimum three projects).

- Bidder shall certify that he owns or has commitments for the use of all necessary equipment, materials, and manpower to complete the work within the time specified.

- In addition, the following items and conditions will be considered, where applicable, in the determination of the award of the Contract:

  a. Compliance with Specification

  b. Completion of the Bidding Documents

2.4 Health and Safety

The contractor must adhere to the attached Health and Safety Plan (HASP) to be provided by TAT. Bidder's personnel must meet the requirements of this HASP and, when required by site conditions, follow the directions of the EPA Site Health and Safety Officer (HSO) to protect personnel and/or the environment.

2.4.1 Support of Community Relations

The Bidder shall make every effort to maintain good relations with adjacent property owners and occupants. All Bidder's field personnel employed on site should be made thoroughly cognizant of the importance of this aspect of the work and its sensitivity to the entire program, as well as to the successful completion of the Bidder's particular assignment.

All field activities shall be conducted in an efficient and professional manner, with the minimum practical damage to the site environment. Thus, tree and brush removal and similar impacts upon the existing site environment shall be limited to only those approved by EPA.

2.4.2 Security

The Bidder shall be responsible for securing his equipment and materials at the site. Site security will be provided by ERCS contractor.

2.4.3 Protective Equipment and Clothing, Utilities, and Services

The Bidder shall supply all necessary equipment and clothing for Level D and Level C protection. ERCS will designate the parking, equipment storage, and personnel decontamination areas.

2.4.4 Medical Surveillance

EPA requires that all persons operating at a work site participate in the medical surveillance and Health and Safety Training program. As part of this program, Bidders must fulfill the following requirements:

- The Bidder must ensure that all employees working on site have obtained a comprehensive medical-physical examination (or equivalent) within 1 yr prior to the date scheduled to work on an EPA site. This physical examination must include tests to certify an employee's ability to wear a respirator. Before commencing work and within 5 calendar days from date of contract award, the Bidder is required to provide EPA with a physician's statement medically qualifying each employee.

- EPA will provide a 1-day Fundamental Health and Safety Training course for the Bidder's employees their first day on site.

2.5 Project Schedule

The Bidder shall make every effort to maintain the schedule. The Bidder shall base his quote on 10-hr days, 6 days per week with any schedule makeup to be accomplished on Sundays. The successful contractor shall be willing to mobilize to the project site within 1 wk of award.

2.6 Measurement and Payment

At the satisfactory completion of all of the work described herein, the EPA geologist will recommend payment on receipt of the Bidder's invoice and other requested documentation. If Level C protection is required for on site work instead of the base Level D protection, EPA will provide a form on which the EPA geologist and the Bidder will each initial the starting and completion times for each of the Bidder's personnel performing the particular work task in Level C protection. Payment for the task(s) will then be based on the number of personnel, elapsed time, and the respective quoted hourly rate above that of Level D protection.

2.7 Submittals and Deliverables

The Bidder shall schedule and prepare the following submittals and deliverables:

Mandatory Submittals	Due
Methodology plan per Section 2.2.1	With Bid
Experience records per Section 2.2.2	With bid
Bid Quotation Form and Schedules	

FIGURE 3-1

SAMPLE BID SHEET FOR DRILLING PRICE QUOTES

ITEM	ESTIMATED QUANTITY	UNITS	FIRM PRICE	ESTIMATED TOTAL COST
o Mobilization				-----
o Monitor Wells Mud Rotary Drilling 8-in borehole	100 ft.	LF	------	----
o Well Development	-----/hr	HR	------	----
o Stand-by Time*	-----/hr	HR	------	----
o Monitor Well Construction	-----/hr	HR	------	----
o Surcharge for Working in "Level C Protection"				
*in excess of 1 hr between boring locations			TOTAL	----

COMPANY:_____

SIGNATURE:_____

DATE:_____

APPENDIX A

EPA REGION IV

ENGINEERING SUPPORT BRANCH

STANDARD OPERATING PROCEDURES

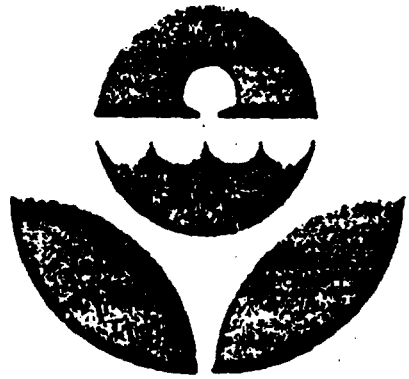
ENGINEERING SUPPORT BRANCH

STANDARD OPERATING PROCEDURES

AND

QUALITY ASSURANCE MANUAL

APRIL 1, 1986



U. S. Environmental Protection Agency
Region IV
Environmental Services Division
College Station Road
Athens, Georgia 30613

APPENDIX B
STANDARD CLEANING PROCEDURES

B.1 GENERAL

B.1.1 Introduction

The cleaning procedures outlined in this appendix are to be used by all Branch personnel to clean sampling and other field equipment as well as sample containers prior to field use. Sufficient clean equipment and sample containers should be transported to the field so that an entire inspection or investigation can be conducted without the need for cleaning equipment in the field. However, this will not always be possible when using specialized field equipment. Field cleaning procedures are included to cover these special problem areas. Emergency field sample container cleaning procedures are also included; however, they should not be used unless absolutely necessary. Specific cleaning procedures are presented in the following sections.

These procedures are the standard operating procedures (SOP) for the Branch; any deviation from them must be documented in field records and investigative reports.

B.1.2 Cleaning Materials

The cleaning materials referred to in this appendix are defined in the following paragraphs.

The laboratory detergent shall be a standard brand of phosphate-free laboratory detergent such as Alquinox® or Liquinox®. The use of any other detergent must be justified and documented in the field logbooks and inspection or investigative reports.

The nitric acid solution (10 percent) shall be made from reagent-grade nitric acid and deionized water.

The standard cleaning solvent shall be pesticide-grade isopropanol. However, solvents may be substituted for a particular investigation if needed. Pesticide-grade acetone or methanol are both acceptable. However, it should be noted that if pesticide-grade acetone is used, the detection of acetone in samples collected with acetone rinsed equipment is suspect. Pesticide-grade methanol is much more hazardous to use than either pesticide-grade isopropanol or acetone, and its use is discouraged. Pesticide-grade hexane and petroleum ether are not miscible with water; therefore, these two solvents are not effective rinsing agents unless equipment is dry. The use of any solvent other than pesticide-grade isopropanol for equipment cleaning purposes must be justified and its use must be documented in field logbooks and inspection or investigation reports.

Tap water may be used from any municipal water treatment system. The use of an untreated potable water supply is not an acceptable substitute for tap water.

Deionized water is defined as tap water that has been treated by passing through a standard deionizing resin column. The Branch utilizes a 5-micron prefilter followed by a mixed bed deionization unit to produce deionized water. The in-house deionized water available at the Environmental Research Laboratory (ERL), Athens is also acceptable. The deionized water should contain no heavy metals or other inorganic compounds (i.e., at or above analytical detection limits) as defined by a standard Analytical Support Branch (ASB) inductively coupled Argon Plasma Spectrophotometer (ICP) scan. Organic-free water is defined as tap water that has been treated with activated carbon and deionizing units. The Branch utilizes a 5-micron prefilter, activated carbon unit, two mixed bed deionizing units (in series), a 0.2 micron post filter, and a post-carbon filter to produce organic-free water. The Milli-Q® system also produces organic-free water. Organic-free water should contain no pesticides, herbicides, extractable organic compounds, and less than 50 ug/l of purgeable organic compounds as measured by a low level ASB GC/MS scan.

During cleaning operations, the substitution of a higher grade water (i.e., deionized or organic-free water for tap water) is permitted and need not be noted as a variation of this SOP. However, the deionized and organic-free water utilized must be subjected to the specific quality control procedures as outlined in Section B.2.2.

The brushes used to clean equipment as outlined in the various sections of this appendix shall not be of the wire-wrapped type.

The solvents, nitric acid solution, laboratory detergent, and rinse waters used to clean equipment shall not be reused, except as specifically permitted in the footnote for Step 3, Section B.3.

B.1.3 Marking of Cleaned Sampling Equipment and Containers

All equipment and sample containers that are cleaned utilizing these procedures shall be tagged, labeled, or marked with the date that the equipment was cleaned. Also, if there was a deviation from the standard cleaning procedures oulined in this appendix, this fact should be noted on the label.

When sample containers are cleaned and prepared, they should be cleaned in standard sized lots of 100 to facilitate the quality control procedures outlined in Section B.2.

B.1.4 Marking and Segregation of Used Field Equipment

Field or sampling equipment that needs to be repaired shall be identified with a red tag. Any problems encountered with the equipment and needed repairs shall be noted on this tag. Field equipment or reusable sample containers needing cleaning or repairs shall <u>not</u> be stored with clean equipment, sample tubing, or sample containers. Field equipment, reusable sample containers, disposable sample containers, and sample tubing that are not used during the course of an investigation may <u>not</u> be replaced in storage, without being re-cleaned, if these materials are transported to a facility or study site where herbicides, pesticides, organic compounds, or other toxic materials are present or suspected of being present, if in the opinion of the field investigator, they may have become contaminated during the course of the field investigation.

B.1.5 Decontamination of Equipment Used to Collect Samples of Toxic or Hazardous Waste

Equipment that is used to collect samples of hazardous materials or toxic wastes or materials from hazardous waste sites, RCRA facilities, or in-process waste streams shall be decontaminated before it is returned from the field. At a minimum, this decontamination procedure shall consist of washing with laboratory detergent and rinsing with tap water. More stringent decontamination procedures may be required, depending on the waste sampled.

B.1.6 Proper Disposal of Cleaning Materials

The solvent used to rinse sampling equipment and containers shall be collected and disposed of by allowing it to evaporate under a fume hood or be containerized and disposed of through an approved hazardous waste disposal contract. Similarly, spent nitric acid shall be collected and disposed of through the same disposal contract. These procedures apply whether the cleaning operations take place in the Branch washroom or in the field.

B.1.7 Use of Safety Procedures to be Utilized During Cleaning Operations

The materials used to implement the cleaning procedures outlined in this appendix can be dangerous if improperly handled. Due caution must be exercised by all Branch personnel and all applicable safety procedures shall be followed. At a minimum, the following precautions shall be taken in the washroom and in the field during these cleaning operations:

1. Safety glasses with splash shields or goggles, neoprene gloves, and a neoprene laboratory apron will be worn during all cleaning operations.

2. All solvent rinsing operations will be conducted under a fume hood or in the open (never in a closed room).

3. No eating, smoking, drinking, chewing, or any hand to mouth contact shall be permitted during cleaning operations.

B.1.8 Storage of Field Equipment and Sample Containers

All field equipment and sample containers shall be stored in a contaminant free environment after being cleaned using the procedures outlined in this appendix.

B.2 SPECIFIC QUALITY CONTROL PROCEDURES FOR CLEANING OPERATIONS

B.2.1 General

This section establishes guidelines for specific quality control procedures to monitor the effectiveness of the sampling equipment and sample container cleaning procedures outlined in this appendix. These procedures shall be carried out by Branch personnel and the results monitored by the Branch Quality Assurance Officer. All quality control procedures shall be recorded in a logbook maintained in the Branch washroom(s). All quality control data shall be maintained in a separate quality assurance file. Upon receipt of quality control data from the ASB, the Branch Quality Assurance Officer shall review these data to identify any abnormalities or contamination of sampling equipment or sample containers. If problems are detected, the Branch Quality Assurance Officer shall immediately initiate an investigation to determine the cause of the problem(s) and institute immediate corrective action.

B.2.2 Rinse Water

The quality of the deionized and organic-free water used shall be monitored by collecting samples once per quarter in standard precleaned, sample containers and submitting them to the ASB for a standard ICP scan. Organic-free water will also be submitted for low level pesticide, herbicide, extractable and purgeable compounds analyses. When field deionizing and/or organic-free water units are utilized, more frequent quality control samples will be collected. An initial sample and samples at weekly intervals are the minimum number considered acceptable.

B.2.3 Sampling Equipment Cleaned in Branch Washroom

The effectiveness of the equipment cleaning procedures used in the Branch washroom shall be monitored by rinsing cleaned equipment (equipment used to collect samples for trace organics and metals analyses) with organic-free or Milli-Q® water and submitting the rinse water to the ASB for low level analysis of extractable organic compounds including pesticides and a standard ICP scan. At least one piece of field equipment shall be selected for this procedure each time equipment is washed. An attempt should be made to select different pieces of equipment for this procedure, each time equipment is washed, so that a representative sampling of all equipment is obtained over a 12-month period.

B.2.4 Sampling Equipment Cleaned in the Field

The effectiveness of field cleaning procedures shall be monitored by rinsing field cleaned equipment with organic-free water and submitting the rinse water in standard sample containers to the ASB for analysis as outlined in Section B.2.3. Any time equipment is cleaned in the field at least one such quality control sample shall be collected. No more than five percent of the equipment cleaned during large scale field studies shall be subjected to these procedures.

Additional samples may be required to document quality assurance of field cleaning procedures. Any time a source of cleaning materials or rinse water is used other than that specified in Section B.1.2, a sample of that cleaning material or rinse water shall be submitted in standard sample containers as specified in Section B.2.2.

B.2.5 Glass Disposable Sample Containers for Organic Compounds and Plastic Containers for Metals Analyses and Other Specified Organic Compounds

The sample containers will be submitted to the ASB for analysis utilizing the same standard ASB low level analytical techniques as outlined in Section B.2.3. The sample containers will be supplied to the ASB at the rate of one percent of each kind of container used.

B.2.6 Plastic Disposable Sample Containers for Oxygen Demand, Nutrients, and General Inorganics

These containers will be filled with deionized or organic-free water, preserved as required, and submitted to the ASB for the designated parameters for each sample container. These sample containers will be selected at random from the Branch stock at the rate of approximately one percent of each kind of container of the total used.

B.2.7 Reusable Composite Sample and Organic-Free Water Containers

These containers will be rinsed with organic-free water and the rinse water will be submitted to the ASB as outlined in Section B.2.3. Approximately one percent of all such containers cleaned will be subjected to this procedure.

B.3 CLEANING PROCEDURES FOR TEFLON® OR GLASS FIELD SAMPLING EQUIPMENT USED FOR THE COLLECTION OF SAMPLES FOR TRACE ORGANIC COMPOUNDS AND/OR METALS ANALYSES*

1. Equipment will be washed thoroughly with laboratory detergent and hot water using a brush to remove any particulate matter or surface film.
2. The equipment will be rinsed thoroughly with hot tap water.
3. Rinse equipment with at least a 10 percent nitric acid solution.**
4. Rinse equipment thoroughly with tap water.
5. Rinse equipment thoroughly with deionized water.
6. Rinse equipment twice with solvent and allow to air dry for at least 24 hours.
7. Wrap equipment completely with aluminum foil to prevent contamination during storage and/or transport to the field.
8. Rinse the Teflon® or glass sampling equipment thoroughly with tap water in the field as soon as possible after use.

- When this sampling equipment is used to collect samples that contain oil, grease or other hard to remove materials, it may be necessary to rinse the equipment several times with pesticide-grade acetone or hexane to remove the materials before proceeding with Step 1. In extreme cases, it may be necessary to steam clean the field equipment before proceeding with Step 1. If the field equipment cannot be cleaned utilizing these procedures, it should be discarded.

** - Small and awkward equipment such as vacuum bottle inserts and well bailers may be soaked in the nitric acid solution instead of being rinsed with it. Fresh nitric acid solution should be prepared for each cleaning session.

B.4 CLEANING PROCEDURES FOR STAINLESS STEEL OR METAL SAMPLING EQUIPMENT USED FOR THE COLLECTION OF SAMPLES FOR TRACE ORGANIC COMPOUNDS AND/OR METALS ANALYSES*

1. Wash equipment thoroughly with laboratory detergent and hot water using a brush to remove any particulate matter or surface film.

2. Rinse equipment thoroughly with hot tap water.

3. Rinse equipment thoroughly with deionized water.

4. Rinse equipment twice with solvent and allow to air dry for at least 24 hours.

5. Wrap equipment completely with aluminum foil to prevent contamination during storage and/or transport to the field.

6. Rinse the stainless steel or metal sampling equipment thoroughly with rain water in the field as soon as possible after use.

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* - When this sampling equipment is used to collect samples that contain oil, grease or other hard to remove materials, it may be necessary to rinse the equipment several times with pesticide grade acetone or hexane to remove the materials before proceeding with Step 1. In extreme cases, when equipment is painted, badly rusted, or coated with materials that are difficult to remove, it may be necessary to steam clean, wire brush, or sandblast equipment before proceeding with Step 1. Any stainless steel sampling equipment that cannot be cleaned using these procedures should be discarded.

B.5 CLEANING PROCEDURES FOR AUTOMATIC WASTEWATER SAMPLING EQUIPMENT

B.5.1 General

All ISCO and other automatic samplers will be cleaned as follows:

- The exterior and accessible interior (excluding the waterproof timing mechanism) portions of automatic samplers will be washed with laboratory detergent and rinsed with tap water.
- The face of the timing case mechanism will be cleaned with a clean damp cloth.
- All tubing (sample intake and pump tubing) will be discarded after use.
- New pre-cleaned, silastic pump tubing (see Section B.6.1) will be installed.
- When utilizing the samplers for collecting samples for metals and/or organic compounds analyses, the metal distributor tubes should not be used; only glass or silastic pump tubing should be used for this purpose.
- The ISCO 1680 automatic samplers should not be used for collecting samples for organic compounds analyses in the individual bottle mode because there is no way to properly clean the distributor plate to remove any residual organic compounds. The sample tubing headers may not be used to collect samples for organic compounds analyses for the same reason. The ISCO 2100 automatic samplers may be used to collect samples for organic compounds analyses in the individual bottle mode, if the specific cleaning procedures for the ISCO 2100 glass sequential bottles are followed as outlined in Section B.5.8.

Specific cleaning procedures for components of the ISCO automatic samplers follow.

B.5.2 ISCO 1680 Automatic Sampler Rotary Funnel and Distributor

1. Use only for non-organic compounds sample collection using individual sequential bottles.
2. Clean with hot water, laboratory detergent and a brush.
3. Rinse thoroughly with deionized water.
4. Replace in sampler.

B.5.3 ISCO 1680 Automatic Sampler Metal Tube

1. Clean as outlined in C.5.2.

B.5.4 All Automatic Sampler Headers

1. Disassemble header and using a bottle brush, wash with hot water and phosphate free laboratory detergent.

2. Rinse thoroughly with deionized water.

3. Reassemble header, let dry thoroughly and wrap with aluminum foil.

B.5.5 Reusable Glass Composite Sample Containers*

1. Wash containers thoroughly with hot tap water and laboratory detergent, using a bottle brush to remove particulate matter and surface film.

2. Rinse containers thoroughly with hot tap water.

3. Rinse containers with at least 10 percent nitric acid.

4. Rinse containers thoroughly with tap water.

5. Rinse containers thoroughly with deionized water.

6. Rinse twice with solvent and allow to air dry for at least 24 hours.

7. Cap with aluminum foil or Teflon® film.

8. After using, rinse with tap water in the field, seal with aluminum foil to keep the interior of the container wet, and return to the laboratory.

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* - When these containers are used to collect samples that contain oil, grease or other hard to remove materials, it may be necessary to rinse the container several times with pesticide grade acetone before proceeding with Step 1. If these materials cannot be removed with acetone, the container should be discarded. Glass reusable composite containers used to collect samples at pesticide, herbicide, or other chemical manufacturing facilities that produce toxic or noxious compounds shall be disposed of "properly" (preferably at the facility) at the conclusion of sampling activities and shall not be returned for cleaning. Also, glass composite containers used to collect in-process wastewater samples at industrial facilities shall be discarded after sampling. Any bottles that have a visible film, scale, or discoloration remaining after this cleaning procedure shall also be discarded.

B.5.6 Plastic Reusable Composite Sample Containers*

1. Proceed with the cleaning procedures as outlined in B.5.5 but omit the solvent rinse.

B.5.7 ISCO 1680 and 2100 Glass Sequential Sample Bottles Automatic Sampler Base for Sequential Mode**

1. Rinse with 10 percent nitric acid.
2. Rinse thoroughly with tap water.
3. Dishwasher, wash cycle, using laboratory detergent cycle, followed by tap and deionized water rinse cycles.
4. Replace bottles in covered, automatic sampler base; cover with aluminum foil for storage.
5. Rinse bottles in the field as soon as possible after using tap water.

B.5.8 ISCO 2100 Glass Sequential Sample Bottles (Automatic Sampler Base For Sequential Mode) To Be Used For Collecting Samples for Organic Compounds Analyses

1. Proceed as outlined in Steps 1-4 in Section B.5.7.
2. Rinse twice with solvent and allow to air dry for at least 24 hours.
3. Replace in covered, automatic sampler base; cover with aluminum foil for storage and mark the base as follows: "Cleaned for organic analyses."

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* - Plastic reusable sample containers used to collect samples from facilities that produce toxic or noxious compounds or are used to collect in-process waste stream samples at industrial facilities will be disposed of properly (preferably at the facility) at the conclusion of the sampling activities and will not be returned for cleaning. Any plastic composite sample containers that have a visible film, scale, or other discoloration remaining after this cleaning procedure will be discarded.

** - These ISCO 1680 glass sequential sample bottles are not to be used for collecting samples for organic compounds analyses. The ISCO 2100 bottles also are not to be used for collecting samples for organic compounds analyses unless the cleaning procedures outlined in B.5.8 are used.

B.5.9 Bottle Siphons Used To Transfer Sample From Composite Container

1. Use a new siphon for each sampling location.

2. Use 3/8-inch Teflon® tubing for samples collected for organic compounds analyses. The tubing should be rinsed with solvent and dried in the ASB drying oven overnight before use. The ends of the siphon should be capped with aluminum foil and/or Teflon® film for storage. The siphon should be flushed with sample thoroughly before use.

3. The 3/8-inch PVC tubing utilized for samples, other than those collected for organic compounds analyses, should be thoroughly flushed with sample before use.

B.5.10 Reusable Teflon® Composite Mixer Rods

1. Follow procedure outlined in Section B.3.

2. Wrap rod in aluminum foil for storage.

B.6 CLEANING PROCEDURES FOR SAMPLE TUBING

B.6.1 Silastic Rubber Pump Tubing Used In Automatic Samplers and Other Peristaltic Pumps

New precleaned tubing must be used for each automatic sampler set-up. The silastic rubber pump tubing need not be replaced in peristaltic pumps where the sample does not contact the tubing or where the pump is being used for purging purposes (i.e., not being used to collect samples).

The silastic tubing shall be precleaned as follows:

1. Flush tubing with hot tap water and phosphate-free laboratory detergent.
2. Rinse tubing thoroughly with hot tap water.
3. Rinse tubing with deionized water.
4. Install tubing in automatic sampler or peristaltic pump.
5. Cap both ends of tubing with aluminum foil.

B.6.2 Teflon® Sample Tubing

Use only new Teflon® tubing precleaned as follows for collection of samples for organic compounds analyses:

1. Teflon® tubing shall be precut in convenient lengths before cleaning.
2. Rinse outside of tubing with solvent.
3. Flush interior of tubing with solvent.
4. Dry overnight in the ASB drying oven.
5. Wrap tubing and cap ends with aluminum foil to prevent contamination during storage.

B.6.3 Polyvinyl Chloride (PVC) Sample Tubing (1/8, 1/4, or 3/8 Inch)

1. Use only new tubing.
2. The tubing will be flushed with sample immediately before use to remove any residues from the manufacturing or extruding process.
3. Polyvinyl chloride tubing will be used selectively where organic compounds are not of concern.
4. Tubing should be stored in original container and not removed from this container until needed.

B.6.4 Stainless Steel Tubing

1. Wash with laboratory detergent and hot water using a long, narrow, bottle brush.

2. Proceed with Steps 2-6 as outlined in Section B.4 (footnote applies).

B.6.5 Glass Tubing

Use new glass tubing, precleaned as follows:

1. Rinse thoroughly with solvent.

2. Air dry for at least 24 hours.

3. Wrap tubing completely with aluminum foil to prevent contamination during storage.

4. Discard tubing after use.

B.7 MISCELLANEOUS EQUIPMENT CLEANING PROCEDURES

B.7.1 Well Sounders or Tapes Used to Measure Ground Water Levels*

1. Wash with laboratory detergent and tap water.
2. Rinse with tap water.
3. Rinse with deionized water.
4. Equipment should be placed in a polyethylene bag or wrapped with polyethylene film to prevent contamination during storage or transit.

B.7.2 Submersible Pumps and Hoses Used to Purge Ground Water Wells*

Proceed as outlined in Section B.7.1.

B.7.3 Portable Power Augers Such as the Little Beaver®

1. The engine and power head should be cleaned with a power washer, steam jenny, or hand washed with a brush using detergent (does not have to be laboratory detergent but should not be a degreaser) to remove oil, grease, and hydraulic fluid from the exterior of the unit. These units should be rinsed thoroughly with tap water.
2. All auger flights and bits shall be cleaned utilizing the procedures outlined in Section B.4 (including footnotes) or Section B.8.3 (including footnotes if appropriate).

B.7.4 Large Soil Boring and Drilling Rigs

1. The rig should be cleaned before being mobilized and brought on-site as outlined in Step 1 of Section B.7.3.
2. All auger flights, auger bits, drilling rods, drill bits, hollow stem augers, Split Spoon Samplers, Shelby Tubes, or other parts of the drilling equipment that will contact the soil or ground water should be cleaned as outlined in Section B.4 (including footnotes) or Section B.8.3 (including footnotes if appropriate).

B.7.5 Miscellaneous Sampling and Flow Measuring Equipment

Miscellaneous flow measuring and sampling equipment shall be washed with laboratory detergent, rinsed with hot tap water, followed by a thorough deionized water rinse, and dried before being stored. This procedure is not used for any equipment utilized for the collection of samples for trace organic compounds or metals analyses.

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* - The same procedure applies whether this equipment is cleaned in the Branch washroom or in the field.

B.7.6 ISCO Flow Meters, Field Analytical Equipment, and Other Field Instrumentation

The exterior of sealed, watertight equipment such as ISCO flow meters should be washed with a mild detergent (for example, liquid dishwashing detergent) and rinsed with tap water before storage. The interior of such equipment may be wiped with a damp cloth if necessary.

Other field instrumentation should be wiped with a clean, damp cloth; pH meter probes, conductivity probes, DO meter probes, etc. should be rinsed with deionized water before storage.

The desiccant in flow meters and other equipment should be checked and replaced if necessary each time the equipment is cleaned.

B.7.7 Ice Chests and Shipping Containers

All ice chests and reusable containers will be washed with laboratory detergent (interior and exterior) and rinsed with tap water and air dried before storage. In the event that an ice chest becomes severely contaminated, in the opinion of the field investigator, with concentrated waste or other toxic material, it shall be cleaned as thoroughly as possible, rendered unusable, and disposed of properly.

B.7.8 Pressure Field Filtration Apparatus*

1. Proceed with steps 1 through 5 as outlined in Section B.3, assembling and applying pressure to the apparatus after each rinse step (water and acid) to drive rinse material through the porous glass filter holder in the bottom of the apparatus.

2. Assemble the apparatus and cap both the pressure inlet and sample discharge lines with aluminum foil to prevent contamination during storage.

B.7.9 Organic-Free Milli-Q® Water Storage Containers

1. These containers will be used only for storing organic-free or Milli-Q® water.

2. New containers shall be prepared as outlined in Section B.5.5, Steps 1-5, then rinsed thoroughly with organic-free or Milli-Q® water, filled with Milli-Q® water and capped.

3. Used containers shall be capped with aluminum foil immediately after being used in the field.

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* - The same procedure applies whether the pressure filtration apparatus is cleaned in the Branch washroom or in the field.

4. The exterior of the container will be washed with laboratory detergent and rinsed with deionized water if necessary.

5. The interior of the container shall be rinsed twice with solvent.

6. The interior of the container will be thoroughly rinsed with organic-free or Milli-Q® water. The container will be filled with organic-free or Milli-Q® water and capped with aluminum foil for storage.

B.7.9 Vehicles

All vehicles utilized by Branch should be washed (if possible) at the conclusion of each field trip. This routine maintenance should minimize any chance of contamination of equipment or samples due to contamination of vehicles. When vehicles are used in conjunction with hazardous waste site inspections, or on studies where pesticides, herbicides, organic compounds or other toxic materials are known or suspected to be present, a thorough interior and exterior cleaning is mandatory at the conclusion of such investigations. It shall be the responsibility of the project leader and/or field investigators to see that this procedure is followed.

All vehicles shall be equipped with trash bags and/or trash containers to facilitate vehicle cleaning. All Branch personnel are responsible for keeping field vehicles clean by removing all trash and other debris before it accumulates. All contaminated trash and equipment must be kept separate from ordinary trash and must be disposed of properly on-site or upon return to the Athens facility for proper disposal.

B.8 FIELD EQUIPMENT CLEANING PROCEDURES

B.8.1 General

Sufficient clean equipment should be transported to the field so that an entire study can be conducted without the need for field cleaning. However, this is not possible for some specialized items of field equipment such as portable power augers (Little Beaver®), well drilling rigs, soil coring rigs, and other large pieces of field equipment. In addition, during particularly large scale studies, it is not practical or possible to transport to the field all of the precleaned field equipment required. The following procedures are to be utilized when equipment must be cleaned in the field.

B.8.2 Equipment Used for Routine Sample Collection Activities

For routine operations involving classic parameter analyses, water quality sampling equipment such as Kemmerers, buckets, DO dunkers, dredges, etc. may be cleaned with sample or deionized water between sampling locations. A brush may be used to remove deposits of material or sediment, if necessary. If deionized water is used, water samplers should be flushed with sample at the next sampling location before the sample is collected. It should be emphasized that these procedures cannot be used to clean equipment for the collection of samples for organic compounds or trace metals analyses.

Flow measuring equipment such as weirs, staff gages, velocity meters, and other stream gaging equipment may be cleaned with tap water after use between measuring locations, if necessary.

B.8.3 Teflon®, Stainless Steel or Metal Equipment Used to Collect Samples for Organic Compounds and Trace Metals Analyses*

1. Clean with tap water and laboratory detergent using a brush if necessary to remove particulate matter and surface films.
2. Rinse thoroughly with tap water.
3. Rinse thoroughly with deionized water.
4. Rinse twice with solvent.
5. Rinse thoroughly with organic-free water and allow to air dry as long as possible.
6. If organic-free water is not available, allow equipment to air dry as long as possible. Do <u>not</u> rinse with deionized or distilled water.
7. Wrap with aluminum foil, if appropriate, to prevent contamination if equipment is going to be stored or transported.

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* - Portable power augers (such as the Little Beaver®) or large soil boring or drill rigs should be cleaned as outlined in Step 1 of Section B.7.3 before boring or drilling operations.

B.9 PREPARATION OF DISPOSABLE SAMPLE CONTAINERS

B.9.1 General

No sample container (with the exception of the glass and plastic compositing containers) will ever be reused. All disposable sample containers will be stored in their original packing containers. When packages of uncapped sample containers are opened, they will be placed in new plastic garbage bags and sealed to prevent contamination during storage. Specific precleaning instructions for disposable sample containers are given in the following sections. These instructions apply to precleaned disposable sample containers whether they are purchased from a contractor or are precleaned by Branch personnel.

B.9.2 One-Pint Storemore, One-Quart Storemore, One-Half Gallon, and One-Gallon Plastic Containers for Oxygen Demand, Nutrients, Classic Inorganic, Sulfide, and Cyanide Analyses

1. Only new containers will be used.

B.9.3 One-Half and One-Gallon Amber Glass Bottles (Water Samples), 8; 16; and 32-Ounce Clear Widemouth Jars (Soil, Sediment, Sludge, and Concentrated Waste) With Teflon® Lined Caps for Organic Compounds (Excluding Purgeables) and Metals Analysis

1. Wash bottles, and jars, Teflon® liners, and caps in hot tap water and laboratory detergent.
2. Rinse three times with tap water.
3. Rinse with nitric acid solution.*
4. Rinse three times with deionized water.
5. Rinse bottles, jars, and liners (not caps) with solvent.*
6. Oven dry bottles, jars, and liners at 125°C. Allow to cool.
7. Place liners in caps and cap containers.
8. Store containers in contaminant-free area.

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* - Some bottle cleaning contractors use pesticide grade methylene chloride to solvent rinse sample containers. Also some of these contractors use 1:1 reagent grade nitric acid to rinse sample containers. For the purpose of cleaning sample containers as outlined in Sections B.9.3 and B.9.5, both of these deviations from the information contained in Section B.1.2 are permitted.

B.9.4 40 ml Glass Vials for Water Samples (Purgeable Organic Compounds Analysis) and 250 ml Amber Glass Narrow Necked Bottles for Water Samples (TOX Analysis) with Teflon® Lined Septa; and 4-Ounce (120 ml) Clear Widemouth Glass Jars with Teflon® Liner for Soil Samples (Purgeable Organic Compounds Analysis)

1. Wash vials, bottles and jars, Teflon® liners and septa, and caps in hot tap water and laboratory detergent.
2. Rinse all items with deionized water.
3. Oven dry at 125°C.
4. Allow all vials, bottles, jars, liners, and septa to cool in an enclosed contaminant-free environment.
5. Seal vials, bottles, and jars with liners or septa as appropriate and cap.
6. Store vials, bottles, and jars in a contaminant free area.

B.9.5 One Liter Polyethylene Bottle for Metals and General Inorganics

1. Wash polyethylene bottles and caps in hot water with laboratory detergent.
2. Rinse both with nitric acid solution.
3. Rinse three times with deionized water.
4. Invert bottles and dry in contaminant free environment.
5. Cap bottles.
6. Store in contaminant free area.

B.10 EMERGENCY DISPOSABLE SAMPLE CONTAINER CLEANING

New one-pint or one-quart mason jars may be used to collect samples for analyses of organic compounds and metals in waste and soil samples in an emergency. These containers would also be acceptable on an emergency basis for the collection of water samples for extractable and pesticide organic analyses as well as metal analyses. These jars cannot be used for the collection of water samples for purgeable organic analyses.

The rubber sealing ring should not be in contact with the jar and aluminum foil should be used, if possible, between the jar and the sealing ring. If possible, the jar and aluminum foil should be rinsed with pesticide grade methanol* and allowed to air dry before use. Several empty bottles and lids should be submitted to the laboratory as blanks for quality control purposes.

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* - Pesticide-grade petroleum ether or hexane may also be used. The specific solvent used should be specified.

BACKGROUND AND SITE-SPECIFIC TECHNICAL SPECIFICATIONS

I. Project Title

Drilling of boreholes and installation of gas monitor wells at the Lees Lane Landfill Site in Louisville, Kentucky, for the U.S. Environmental Protection Agency (EPA).

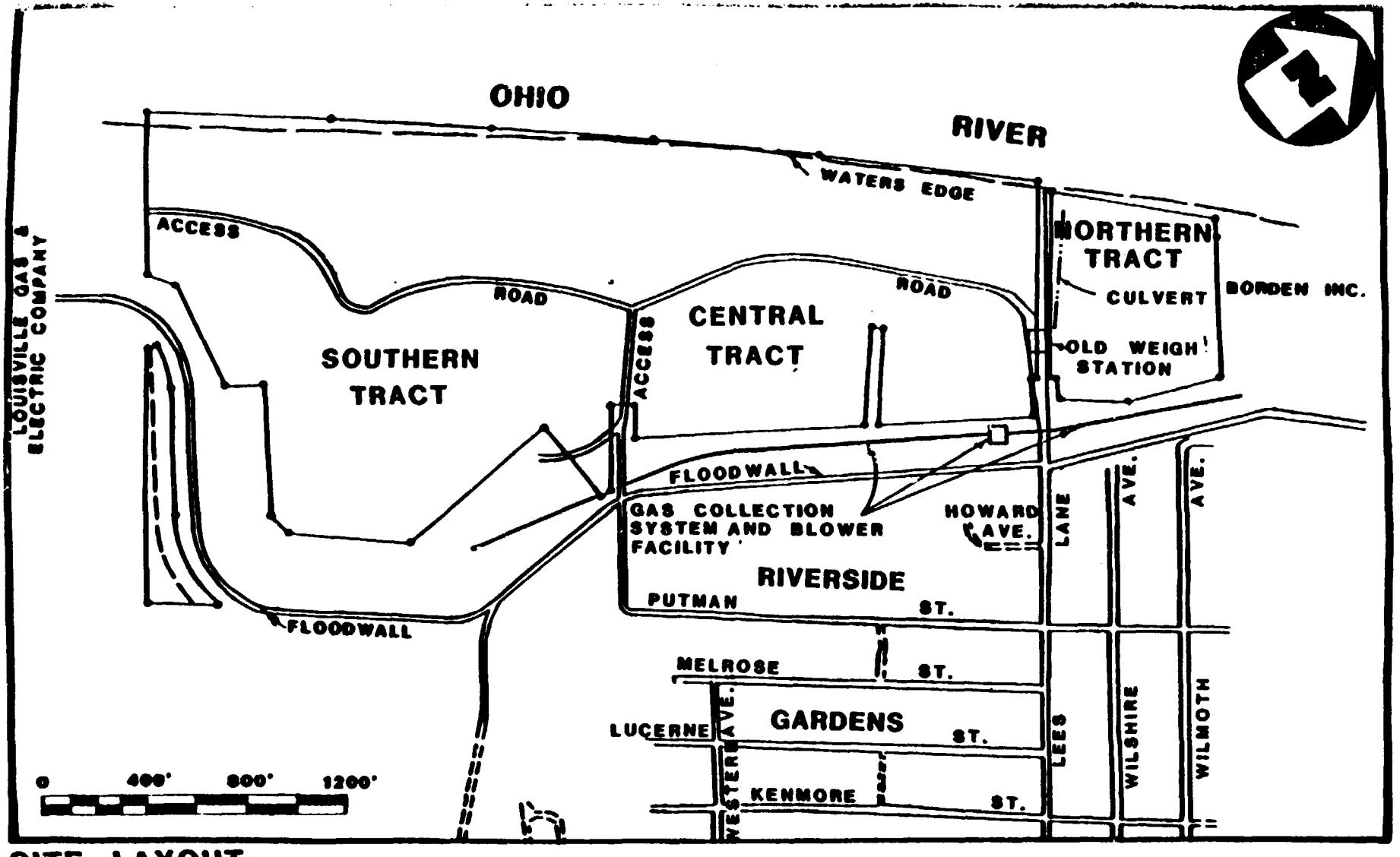
II. Background

The Lees Lane Landfill Site is located adjacent to the Ohio River in Jefferson County, approximately 4.4 miles southwest of Louisville, Kentucky. The site, consisting of approximately 112 acres, is composed of three tracts and measures approximately 5,000 feet in length and 1,500 feet in width (see Figure 1). The Northern and Central Tracts of the landfill consist of level to gently sloping land while the Southern Tract contains two depressions with steep slopes. Up to three terraces, each approximately 20 feet wide, form the slope on the river side of the landfill. Much of the landfill surface is covered with well-established vegetation ranging from brush to woodlands. Elevations range from 383 feet above mean sea level (amsl) along the Ohio River to 461 feet amsl along the levee.

The site is bordered on the east and south by a flood protection levee (designed on the 500-year flood). To the northeast is Borden, Incorporated (a chemical manufacturer), to the south is Louisville Gas and Electric, Cane Run Plant (a coal-burning generating station), and to the east is Riverside Gardens (a residential development of about 330 homes and 1,100 people). Beyond these areas the surrounding land use is predominantly woodlands and agricultural land.

The geology of the site area consists of approximately 110 feet of Ohio river alluvium and clacial outwash underlain by the New Albany shale, reported to be 100 feet thick. The alluvial aquifer is unconfined with the shale forming an aquitard between the alluvial aquifer and the deeper limestone aquifers. The water table is approximately 50 feet below land surface and the saturated thickness of the aquifer is approximately 60 feet. Flow in the aquifer is predominantly toward the Ohio river. Water levels in the aquifer vary with fluctuations of the Ohio River and up to seven feet of variation in water levels were observed during the RI.

Based on a United States Geological Survey boring in the river in 1945, the Ohio River bed is approximately 30 feet above the shale bedrock. The average Ohio River flow at the site is approximately 114,000 cubic feet per seocnd (cfs). Flood conditions occur every 1.2 years and have



SITE LAYOUT

LEES LANE LANDFILL SITE

JEFFERSON COUNTY, KENTUCKY

FIGURE 1

NUS CORPORATION

A Halliburton Company

an average duration of 12 days. Based on the designated 100-year flood level of 447.6 feet amsl, which occurred in 1945, 25 to 50 percent of the landfill would be inundated with water.

Domestic, commercial, and industrial wastes were disposed of in the landfill from the late 1940s to 1975. Prior to and during its use as a landfill, sand and gravel were quarried at the site by the Hofgesang Company. In 1971, the State permitted the Southern Tract of the landfill under its Solid Waste Program. In 1974, the Lees Lane Landfill permit expired and, due to repeated compliance violations, was not renewed.

In March 1975, the Jefferson County Department of Public Health was notified of the presence of methane gas in Riverside Gardens. As a result of explosive levels of methane gas, seven families along Putman Street were evacuated by the Jefferson County Housing Authority. The homes were purchased and the families were relocated at a cost of $150,000. In April 1975, the Kentucky Natural Resources and Environmental Protection Cabinet (NREPC) filed a lawsuit that resulted in landfill closure. All construction requiring excavation was prohibited within 860 feet of the landfill and any construction proposed within 1,500 feet of the landfill required a gas test.

Between 1975 and 1979, 44 gas observation wells were installed in and around the landfill and in Riverside Gardens to monitor the concentrations, pressure, and lateral extent of methane migration. Samples collected from these wells indicated that the source of the methane and associated toxic gases was the decomposition of landfill wastes. In October 1980, a gas collection system was installed on the site between the fill and Riverside Gardens.

In December 1982, EPA evaluated the Lees Lane Landfill Site using the Hazard Ranking System (HRS) as described in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The overall HRS score was 47.46; which ranked the site in Group 6 on the proposed National Priorities List (NPL). The site received a high ranking due to the distance to the nearest population (300 feet), the floodway location, the identification of landfilled hazardous waste (chromium and vinyl chloride), and the distance to the nearest well (Riverside Gardens). As of August 1987, remedial actions at the site were being pursued. These specifications are a direct response to the proposed remedial design selected by the EPA for this site.

III Site-Specific Technical Specifications

This section provides site specifications and details of the scope of this solicitation. The observation well installations described herein are for the purpose of monitoring the migration of volatile compounds through the subsurface regions of the landfill.

A. General

The Lees Lane Landfill Site has been shown to produce methane gas. The gas, which may contain other contaminants, has the potential to migrate offsite. The subsurface gas migration detection program will require the installation of new observation wells since the existing wells have been damaged or removed. Four sets of monitor wells, each consisting of one deep and one shallow well, will be installed outside of the floodwall between the landfill and Riverside Gardens. One additional well will be located along Putnam Street (see Figure 2).

A.1 Scope

Work covered consists of providing all necessary labor and materials required by these specifications for the installation of ten gas monitor wells. The boreholes for the deep wells will be drilled to a depth not to exceed 40 feet below land surface, (bls). The boreholes for the four shallow wells will be drilled to a depth of approximately 15 feet, bls.

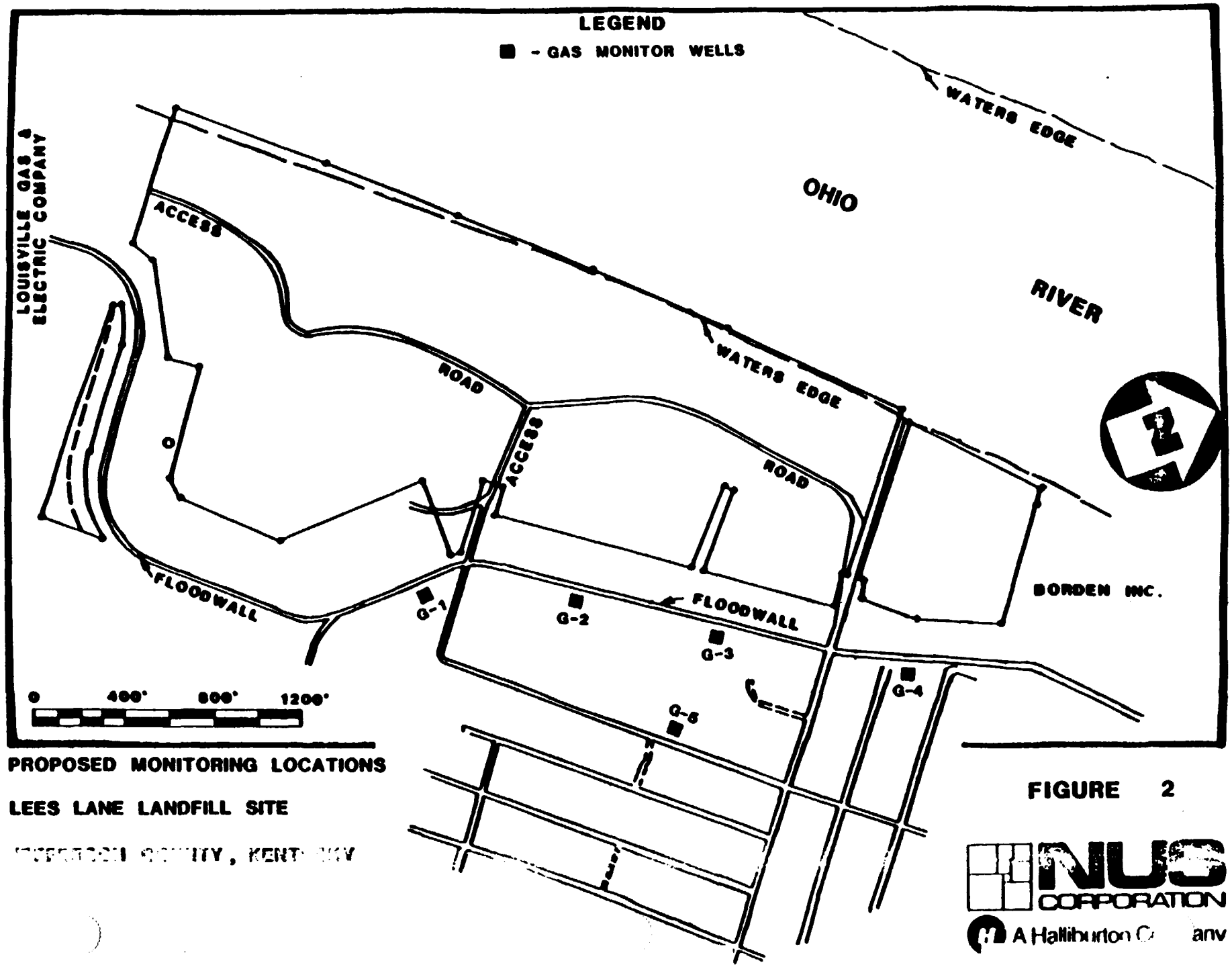
A.2 Site Description

A.2.1 Site Description

The site is located in a residential area adjacent to the Ohio River in Jefferson County, Kentucky. The exact location of the study site is shown in Figure 1.

A.2.2 Location of Monitor Wells

The approximate location of each monitor well assembly is shown in Figure 2. The exact locations will be determined by the onsite EPA Representative. Construction details are describedin Section A.4.



PROPOSED MONITORING LOCATIONS

LEES LANE LANDFILL SITE

[illegible] COUNTY, KENTUCKY

FIGURE 2

NUS CORPORATION

A Halliburton Company

A.2.3 Entrance

Entrance to the site shall be specified at the start-up of the work. The Subcontractor shall comply with directions from the onsite EPA Representative.

A.3 Site Geology

A subsurface investigation was conducted at the site during November and December 1984. The investigation was used to determine subsurface lithology through a drilling and sampling program and to provide groundwater sampling points through a well installation program. The geology encountered during the subsurface investigation at the Lees Lane Landfill Site consisted of Ohio River alluvium composed of a recent silt and clay layer up to 20 feet thick overlying glacial outwash, sand and gravel with intermittent clay lenses. The alluvium and outwash was found to range from 86 to 114 feet in thickness. The New Albany shale was encountered beneath the alluvium. The shale was cored for 5 feet at three different locations. The New Albany shale is of Devonian age and is reported to be 100 feet thick.

In 1945 the U.S. Geological Survey drilled and sampled a well in the Ohio River adjacent to the site. The depth of the River was reported to be 15 feet. The lithology encountered consisted of sand and gravel above shale bedrock. The sediments below the riverbed were reported to be 35.5 feet thick.

The alluvium exhibited a downward coarsening trend which is consistent with published reports for the area. Continuous clay and silt layers were found in the upper 10 to 20 feet and were thicker toward the Ohio River. Intermittent clay and silt was found throughout the lithology but no continuous layers were found below 20 feet that would give rise to more than one water-bearing zone.

The New Albany shale underlying the alluvium was black, fissile, and contained oil. Oil was visible when the cores were split and oil could also be seen in the drilling mud pan. The strike of the shale was found to be approximately N 25o E with the bedrock essentialy flat. The dip of the shale was approximately 8.3 feet per mile in the direction of the Ohio River.

A.4 Construction Details

Each location will contain two boreholes, one for a deep gas monitor well and one for a shallow gas monitor well. Table 1 gives the appropriate depth of each borehole.

Each well will consist of ten feet of perforated 2-inch ID schedule 40 PVC (screen). The diameter of the perforation cannot exceed 1/8-inch. Standard 2-inch PVC with 0.01 inch slots will be an acceptable alternative to the perforated PVC. Two-inch ID PVC casing will extend from the top of the screen to the surface. Each monitor well will be capped with a standard 2" ID Schedule 40 PVC cap. The cap will have two openings, one to allow for a piece of teflon tubing which will run the total length of the assembly and the second to allow for a shorter piece of teflon tubing. The two tube system will provide sampling of gases having densities greater than and lesser than air. In addition, the longer tube will also provide a convenient means of purging the well. The openings around both pieces of tubing will be sealed to make each assembly as air-tight as possible. The end of each piece of tubing will contain a stop valve (t-valve), to be used as an input for inert gas used to purge the system and/or as a gas collection connector. The gas monitoring well assembly is shown in Figure 3.

A.5 Qualifications of Subcontractor

The Subcontractor shall be held responsible, and payment may be withheld for damages to the wells.

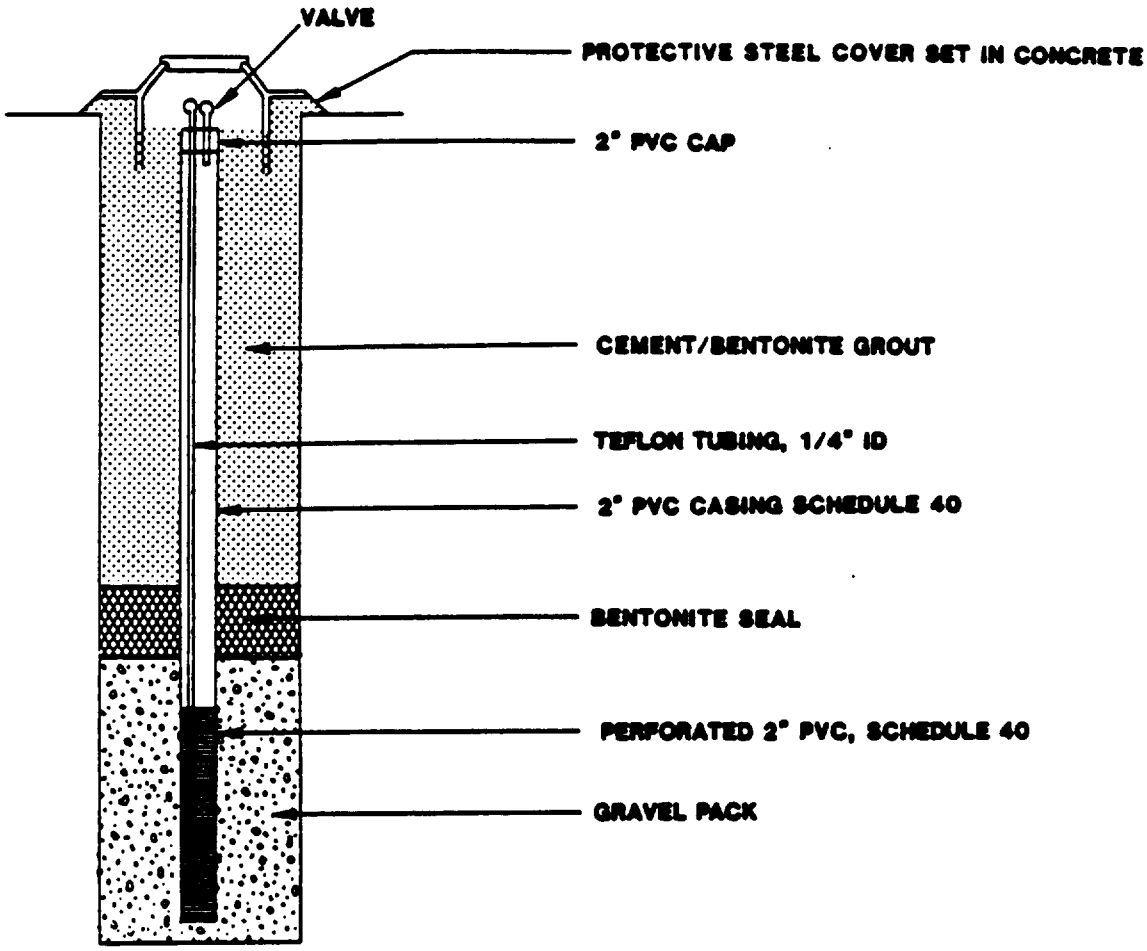
A.5.1 Equipment

Equipment in first-class working order must be provided. The Subcontractor shall use equipment having the minimum capabilities necessary to do the described work. All equipment must be listed on the enclosed equipment schedule (Table 2) and submitted with the bid package.

Table 1

Gas Monitor Wells
Approximate Borehole Depths

Well Number	Depth (Below Land Surface)
G-1D - Deep	40
G-1 - Shallow	15
G-2D - Deep	40
G-2 - Shallow	15
G-3D - Deep	40
G-3 - Shallow	15
G-4D - Deep	40
G-4 - Shallow	15
G-5D - Deep	40
G-5 - Shallow	15



GAS MONITOR ASSEMBLY DESIGN
LEES LANE LANDFILL SITE
JEFFERSON COUNTY, KENTUCKY

FIGURE 3

NUS CORPORATION
A Halliburton Company

TABLE 2

"All Bidders Are Requested To Complete And Submit This Form With Your RFQ

Equipment Schedule

Rig Proposed	Make	Model	Age	Mast Load Capacity	Rotary Table Diam. & Capacity @ 100 rpm	Size & Age of Drill Pipe	Condition	Where Locate

Attending equipment proposed: Give type, make, model, condition, and other pertinent data.

Bidder shall state whether equipment proposed is owned by him. He shall also advise if the required expert crews are in his employ.

A.5.2 Equipment Failures

No unnecessary delays or work stoppages will be tolerated because of equipment failure. These will not be considered as valid reasons for extending the length of the contract.

In the event that a work stoppage occurs due to an equipment failure, the Subcontractor shall either make the necessary repairs or provide, at his own expense, other equipment capable of performing the work.

A.5.3 Lower-tier Subcontractors

If lower-tier drilling Subcontractors are to be employed, they must comply with all applicable Specifications in this document. A statement signed by the lower-tier Subcontractor documenting that he has read, understands, and can and will comply with all Specifications, as written, is required prior to the start-up of any work.

A.6 Drilling Services

A.6.1 Permits

The Subcontractor shall procure all permits, certificates, and licenses required by law to execute the work described herein. Copies of the above must be provided to the EPA prior to commencement of work.

A.6.2 EPA Oversight

The Subcontractor shall provide drilling and well construction services under the inspection of an onsite EPA Representative.

A.6.3 Drilling Rig(s)

The Subcontractor shall provide a drilling rig capable of drilling down to a depth of 40 (± 10 ft) feet.

A.6.4 Driller and Driller's Helpers

The Subcontractor shall provide the necessary driller(s) and driller's helper(s). The Subcontractor shall employ only competent, experienced workmen for execution of the work.

A.6.5 Scheduling

Scheduling for all work to be performed will be at the discretion of the EPA Representative on site. The Subcontractor shall be equipped to perform any work described herein when deemed necessary by the EPA Representative on site.

A.7 Materials

A.7.1 Screen Pack Material

If formation materials do not collapse around the well screen, an artificial gravel pack shall be installed to a level approximately one foot above the top of the well screen. The gravel pack shall consist of washed gravel 0.2 - 0.3 inches in diameter.

A.7.2 Bentonite Seal

Bentonite pellets of a commercial grade and approved by the EPA Representative shall be placed on top of the screen pack to a thickness of approximately 24 inches. The exact thickness of the seal must be approved by the onsite EPA Representative. De-ionized water shall be used to hydrolize the pellets.

A.7.3 Grout

Grout shall be installed from the top of the bentonite seal to the ground surface. the grout shall consist of a mixture of bentonite (prehydrated) and Portland cement (Type 1). The grout/bentonite/water ratio shall be as follows: 1 bag cement (94 lbs)/2 lbs. bentonite/8 gallons water.

A.7.4 Well Casing

The monitoring well casings shall consist of 2-inch diameter, schedule 40 PVC with threaded flush joints. No grease, oil, or other petroleum-based material will be applied to the threads. All threads will be wrapped with teflon tape.

A.7.5 Screens

The well screen shall consist of 2-inch diameter (1/8 inch perforated or 0.010-inch machine-slotted), schedule 40, PVC with bottom caps. Screens shall be attached to each well casing using a screw-type flush-joint. No grease, oil, or other petroleum-based material will be applied to the threads. All threads will be wrapped with teflon tape.

A.8 Drilling Operations

The boreholes can be drilled by any method capable of putting in, at a minimum, a 4-inch ID hole. The drill rig must be able to drill to a 40- ($\pm$10 feet) foot depth. The exact depths of the boreholes will be determined by the EPA Representative onsite.

A.9 Monitor Well Assembly Installation

The deep wells will be set at a depth above the previously determined water table. The annular space between the well assembly and borehole wall will be measured to determine any formation collapse around the screen. Washed gravel (0.2-0.3 in. diameter) will be added to the annular space to a level approximately 1-foot above the top of the screen. Total formation collapse and gravel pack will not extend higher than 2 feet above the top of the screen and will be determined using a measuring tape. A two-foot bentonite pellet seal, followed by a tremmied cement/bentonite slurry to land surface will be installed on top of the gravel pack. A protective steel casing with locking cap will be cemented in place. The outside of the protective casing above ground will then be painted orange and labeled to distinguish these wells from the groundwater monitor wells.

A.10 Disposal of Drilling Wastes

At each drilling location, a shallow pit will be constructed, if necessary, to control all drilling wastes generated by drilling. Following the well installation operations, each pit will be backfilled and returned to approximate original conditions.

A.11 Health and Safety Information

Based on the nature of the facility operations, an organic vapor analyzed (OVA) or HNU unit and an explosimeter will be used for continuous monitoring during drilling. A complete Health and Safety Plan, including detailed information on suspected contaminants and emergency procedures will be reviewed with all parties prior to the commencement of the project and posted onsite for the duration of the project.

A.12 Decontamination and Cleaning

Specific decontamination and cleaning procedures will be outlined and conducted by the subcontractor then confirmed by the EPA Representative prior to the commencement of work.

A.12.1 Personnel

All personnel will be decontaminated prior to leaving any controlled areas as defined onsite by the EPA Representative. Temporary decontamination areas may be required at each boring location. The subcontractor will supply tap-quality water obtained from an approved off-site source, brushes, polyethylene sheeting, and distilled water. The personnel decontamination procedure shall be as follows:

a. Rinse with tap-quality water and brush to remove visible solids.
b. Wash with soap and tap water and rinse.
c. Rinse with distilled water.

A.12.2 Equipment

All drilling equipment will be decontaminated under the supervision of the EPA Representative at job start-up and before final exit from the site. Temporary

decontamination areas at a location determined by the EPA Representative will be required at each boring location. Equipment and personnel will be decontaminated in the same areas. The subcontractor will supply pressurized steam cleaning equipment, brushes, hose, polyethylene sheeting, metal pipe stands, and any other equipment and materials as needed. Equipment and material to be decontaminated include: drilling rig, drill rods, bits, tubs, water tank, hoses, pipes, well screens, well casing, sampling equipment, and any other equipment or material deemed necessary by the EPA Representative. Equipment used to store or apply decontamination solutions must be constructed or lined with stainless steel or teflon. All tubing used to apply the solutions must be 100% Teflon or teflon-lined. There will be no exceptions to this requirement. The equipment decontamination procedure shall be as follows:

a. Rinse with tap-quality water and brush to remove visible solids.
b. Wash with soap and water using a pressurized steam cleaner and brush.
c. Rinse with tap water.
d. Rinse with 2-Propanol (Pesticide-grade).
e. Final rinse with distilled water.

Operation of the borehole decontamination area will be at the direction of the EPA Representative in accordance with the site Health and Safety Plan.

A.13 Reporting Requirements

The Region IV EPA Representative will decide prior to commencement of the project what documentation will be required of the Subcontractors. Any information supplied to the EPA shall be provided in good order and shall be clear and legible. At a minimum, well construction logs will be maintained by the subcontractor. Submittal of all required information must be completed prior to final payment. All information shall be identifiable with the boring or well to which it relates.

A.14 Quality Assurance

The SUBCONTRACTOR shall submit their quality assurance (QA) program to the EPA for approval. The QA program must be approved before work can begin.

Any lower-tier subcontractors shall also be required by the SUBCONTRACTOR to adhere to the approved QA program, security plans, and requirements referred to under this Agreement. The SUBCONTRACTOR shall contact EPA for resolution of any exceptions taken to the QA and/or security plans prior to execution of the subcontract.

- Subcontractor personnel involved in project activities shall be trained in the procedures and methods applicable to their work. Training shall be documented.

- The subcontractor shall exert necessary control to insure that the services or products to be procured meet the appropriate QA requirements and shall report any changes, defects, or noncompliances to the EPA on-site field representative.

- Right of access to facilities, processes, and records shall be granted to EPA so that EPA can monitor subcontractor work and conduct surveillances and/or audits as deemed necessary. Subcontractors whose work does not meet the technical, cost, and quality specification in a timely manner will be issued a nonconformance to contractual requirements. Failure to rectify QA deficiencies to the satisfaction of EPA may result in termination of the subcontract.

- The subcontractor will correct at its own expense any deficiencies found during these audits and/or surveillances. The subcontractor will designate an individual or organization responsible for monitoring quality, interfacing with the EPA Quality Assurance Representative, and resolving matters relating to quality. The attached form has been provided to identify the person(s) responsible for these functions. The form also provides a Statement of Understanding to be signed by the subcontractor indicating understanding of the agreement to the Quality Assurance provisions of this contract.

- Final review and approval of activities performed under the subcontract shall be the responsibility of the Region IV EPA.

Subcontractors shall prepare and maintain sufficient records to furnish documented evidence of the validity of the quality of work and activities affecting quality, if necessary. Their invoices, permits, certifications, personnel qualification records, well drilling logs, analytical methods and procedures, and all other accountable documents that may be used for litigation purposes, shall demonstrate that the items or services

being procured meet the specified contractual requirements. All records shall be readily identifiable and retrievable and shall be made available to the client upon request.

IV. Health and Safety

The following general items must be understood:

1. EPA will develop a site-specific Health and Safety Plan. The subcontractor must, as a minimum, comply with the requirements of the Health and Safety Plan. A Health and Safety Plan including detailed information on suspected contaminants and emergency procedures will be reviewed and posted onsite.

2. The Subcontractor is responsible for providing protective clothing and disposable items, which include clothes, boots, respirator cartridges, disposable coveralls, and gloves. The Subcontractor shall provide appropriate certified air purifying respirators, and/or SCBAs (self-contained breathing apparatus), if necessary.

3. Subcontractor's officials are responsible within their jurisdictions for the implementation of the provisions of this Agreement, for assuring that funds are available for the required training and purchasing and maintaining respiratory protective devices, and for providing occupational medical monitoring.

4. Failure of the Subcontractor to adhere to the Health and Safety Plan or to comply with health and safety instructions from the EPA Representative will be grounds for EPA to discontinue work activity, at the Subcontractor's expense. EPA reserves the right to stop work and/or terminate the subcontract for Health and Safety reasons.

5. All personnel, involved in site activities or who may be required to wear respiratory protection, shall undergo a baseline medical examination at the expense of the subcontractor. Contents of the examination must be determined by the subcontractor's medical physician consultants. The subcontractor must provide his medical consultant with adequate information on the work to be done by each employee and site hazards to enable an evaluation of fitness to be made. The examination must include an OSHA type evaluation of the worker's ability to use respiratory protective equipment. Personnel who have undergone the medical examination and analyses within the past year will not need to be reexamined. A

letter is required PRIOR to start of work from the subcontractor's medical consultant to the EPA Project Manager certifying the medical fitness of each person to perform his duties and to wear respirators. Personnel will have medical testing at the completion of their site activities, if required by the subcontractor's medical consultant to protect their health. Personnel with known exposures or who become unexpectedly ill must be reexamined. The subcontractor's medical consultant will determine the need for reexaminations during the investigation phase of the project. The subcontractor's medical consultant in conjunction with the EPA Site Health and Safety Officer (SHO) will determine the need for medical care in the case of field exposure or illness.

V. Health and Safety Training

These health, safety, and training specifications are designed to establish general procedures and practices for EPA and Subcontractor personnel involved in drilling.

VI. Purpose and Scope

EPA has established a comprehensive health, safety, and training program for all field activities, particularly those which have the potential for chemical exposures. The program is intended to provide adequate procedures, protective gear, monitoring, and follow-up to protect the health of EPA, its representatives, and the Subcontractor, as well as the public near our work sites.

This program is driven by the requirement to comply with Federal and State Occupational Safety and Health Act (OSHA) regulations, the need to minimize the risk of adverse health effects from exposure to work hazards, and the savings inherent in safe work activities. In this regard, all standards, training requirements, medical monitoring, and employee protection requirements for workers engaged in hazardous waste operations, as proposed under 29 CFR 1920/51FR456654, December 19, 1986, must be met.

A Site Health and Safety Officer (SHO) is assigned to evaluate site hazards; develop the health, safety, and training requirements; and provide on-site monitoring of work activities. The SHO is authorized to direct site activities as needed to provide for the safety and health of all involved. This includes modifying or halting all activities as needed to make sure safety plans and other requirements are fulfilled.

Prior to the commencement of any field activities, the Subcontractor will be advised of the EPA Health and Safety Plan for the subject project. The Subcontractor shall strictly comply with all articles of this Health and Safety Plan. Failure to comply with this plan by the Subcontractor or the Subcontractor's employees shall be cause for stopping the work at the expense of the Subcontractor.

During the performance of work under this Subcontract, the Subcontractor shall, at a minimum, satisfy all Federal, State, and local statutes, regulations, ordinances, etc., regarding health and safety. The Subcontractor is responsible for insuring that his employees satisfy all health and safety requirements as well. The Subcontractor shall also document that personnel assigned to the project meet all applicable OSHA training and medical monitoring requirements as provided in 29 CFR 1910.

Only personnel currently or capable of meeting these requirements will be eligible for project work. As noted in the regulations, appropriate training and medical monitoring records must be kept to assist in future employee evaluations. Copies of records insuring compliance to the regulation shall be submitted to EPA with other requested documents at the time the response to this agreement. Beyond this minimum requirement, the Subcontractor shall comply with EPA Health and Safety Plans particular to the site.

VII. Period of Performance

It is essential that the work requested in this solicitation be completed in as short a time as possible, as the data developed from subsequent studies by the EPA will be of significant importance in developing the conclusions for the site. As a result, weekend work may be required. For weekend work, the Subcontractor will be reimbursed at the quoted labor rate.

The period of performance of the work described in this solicitation is two (2) weeks. The Subcontractor shall have all equipment and personnel available to be on the site within six days after notification by the EPA to proceed.

PRICE QUOTATION FORM

Item Description		Total Cost
I.	Mobilization/Demobilization	_____
II.	Borehole drilling	_____
III.	Gas Monitor Well Materials (to include screen and casing)	_____
IV.	Monitor Well Construction Labor	_____
V.	Decontamination Labor	_____
VI.	Decontamination Materials	_____
VII.	Stand-by Time	_____ /hr.
Total Cost (Excluding Item VII)		_____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

CONSENT TO ACCESS
Lees Lane Landfill Site
Louisville, Kentucky

On September 9, 1987, Beverly Houston of the United States Environmental Protection Agency ("EPA"), Region IV, Superfund Branch, contacted you to request your permission to allow EPA to have access to your property, located at 4210 Lees Lane Louisville Ky 40216 for the purpose of installing one (1) monitoring well which will be used to monitor ground water conditions in the area upgradient from the Lees Lane Landfill site. At that time you verbally agreed to allow EPA to have access to your property and to install the well.

This letter shall serve as written confirmation that you do in fact consent to EPA's access to your property for the following purpose and under the following conditions:

> To install one groundwater monitoring well. To monitor the groundwater quality upgradient of the Lees Landfill site. The monitor well will be sampled quarterly for a period of 2 years to determine if contaminants from the landfill are impacting the groundwater quality in the Riverside Gardens Community. If no adverse effects are detected within the 2 year monitoring period, the monitoring program will be discontinued and the well will be plugged and abandoned. If EPA determines after 2 years that additional sampling is needed, you will be contacted for permission to continue monitoring.

By signing this "Consent To Access" letter, you hereby agree to grant EPA and its contractors and subcontractors unconditional access to your property, located at 4210 Lees Lane Louisville Ky 40216 for the purpose of conducting the activities described above.

AGREED THIS 14 DAY OF OCTOBER 1987

T M Anderson

NAME

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

CONSENT TO ACCESS
Lees Lane Landfill Site
Louisville, Kentucky

On September 9, 1987, Beverly Houston of the United States Environmental Protection Agency ("EPA"), Region IV, Superfund Branch, contacted you to request your permission to allow EPA to have access to your property, located at 6406 Kenmore Ave
for the purpose of installing one (1) monitoring well which will be used to monitor ground water conditions in the area upgradient from the Lees Lane Landfill site. At that time you verbally agreed to allow EPA to have access to your property and to install the well.

This letter shall serve as written confirmation that you do in fact consent to EPA's access to your property for the following purpose and under the following conditions:

> To install one groundwater monitoring well. To monitor the groundwater quality upgradient of the Lees Landfill site. The monitor well will be sampled quarterly for a period of 2 years to determine if contaminants from the landfill are impacting the groundwater quality in the Riverside Gardens Community. If no adverse effects are detected within the 2 year monitoring period, the monitoring program will be discontinued and the well will be plugged and abandoned. If EPA determines after 2 years that additional sampling is needed, you will be contacted for permission to continue monitoring.

By signing this "Consent To Access" letter, you hereby agree to grant EPA and its contractors and subcontractors unconditional access to your property, located at _____
for the purpose of conducting the activities described above.

AGREED THIS 10-14 DAY OF OCTOBER 1987

Howard R. Arck

NAME

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

CONSENT TO ACCESS
Lees Lane Landfill Site
Louisville, Kentucky

On September 9, 1987, Beverly Houston of the United States Environmental Protection Agency ("EPA"), Region IV, Superfund Branch, contacted you to request your permission to allow EPA to have access to your property, located at Putman & Wilshire. Vacant lot belonging to Riverside Bapt. Chur for the purpose of installing one (1) monitoring well which will be used to monitor ~~ground water conditions~~ GAS FORMATION in the area upgradient from the Lees Lane Landfill site. At that time you verbally agreed to allow EPA to have access to your property and to install the well.

This letter shall serve as written confirmation that you do in fact consent to EPA's access to your property for the following purpose and under the following conditions:

> To install one ~~groundwater~~ GAS monitoring well. To monitor the ~~groundwater quality~~ OK GAS FORMATION upgradient of the Lees Landfill site. The monitor well will be sampled quarterly for a period of 2 years to determine if contaminants from the landfill are impacting the ~~groundwater quality~~ GAS FORMATION in the Riverside Gardens Community. If no adverse effects are detected within the 2 year monitoring period, the monitoring program will be discontinued and the well will be plugged and abandoned. If EPA determines after 2 years that additional sampling is needed, you will be contacted for permission to continue monitoring.

By signing this "Consent To Access" letter, you hereby agree to grant EPA and its contractors and subcontractors unconditional access to your property, located at Putman & Wilshire. Vacant lot belonging to Riverside Bapt Church. for the purpose of conducting the activities described above.

AGREED THIS 10-14-87 DAY OF OCTOBER 1987

Frank A. Claycomb

NAME

SECTION VIII

Polreps

To: Tim Fields, Headquarters
George Moein, POLREP, Region IV

DATE: MARCH 19, 1987

POLREP NUMBER: 1

NAME OF SITE: LEE'S LANE LANDFILL, LOUISVILLE, KY.

From: OSC: ED HATCHER, REGION IV

SITUATION:

Weather clear, cool on 3/16 & 3/17. Cloudy-showers on 3/18

Personnel on scene:
- ERCS contractor - 3
- TAT - 1
- EPA - 2 (OSC)
- STATE - 1

Dora Ann Danner, EPA Region IV, accompanied E. Hatcher.

ACTIONS TAKEN:

On March 16, 1987, Region IV EPA mobilized Haztech, of Atlanta, GA, to assist at the Lee's Lane Landfill. Actions taken on 3/16, 3/17 and 3/18 included the installation of two gates with locks and warning signs on the access roads. Minimizing any future surface run off from the site was accomplished by capping several State-designated hot spots with clay and containing, with earth, 296 drums scattered on the surface of the site.

FUTURE PLANS:

Future plans include stablizing the western boundary of the site, which abuts the Ohio River, with rip-rap.

COST TO DATE:

	March 17
ERCS	$5,000
EPA	$2,000
TAT	$1,000
Total	$8,000

1-800-345-6666

N1327

POLREP #2 AND FINAL

The removal action at the Lee's Lane Landfill (KY) site was completed on March 18, 1987. ~~Approxi~~ Approximately 296 drums were buried on-site and three "hot spot" areas were capped. Two gates were installed on-site. The total cost of this removal action was $5,788.44.

ERD (202) 755-2155
telefax, Dac 4100
710-822-9269 (TWX)*
892786 (TELEX for USCG POLRE

To: Tim Fields EPA HQ
To: George Moein EPA Region II
From: Ed Hatcher, OSC
Subject: Lee's Lane Landfill, KY
SITUATION:

Tim Fields
To: George Moein
From: Ed Hatcher, OSC
Subject:

Operation 432

To. Tim Fields, Emergency Response Division, EPA HQ and
George Moein, Chief, Emergency Response Section, Region 4

From: ~~Carol~~ Dora Ann Danner, OSC Region 4

Subject: Lee's Lane Landfill, Louisville, KY. - Polrep # 2

Date: 21 May 1987

Situation: On 18 May 1987 Haztech & TAT personnel mobilized to Lee's Lane Landfill, Louisville, KY. A series of 8 test pits were dug, 5 on the South track and 3 on the north track, to determine the extent of the landfills industrial and household waste. The purpose of finding the boundries of waste is to limit the length of the rip raft to be built at a latter date. Trackhoe 215 was primary machine used to dig pits. Ebasco on site to monitor air and placement of pits.

On 19 May 1987 8 test pits were dug in the center track to determine the type of waste and the location for the rip raft. Of these 8 pits 7 samples were taken by Ebasco. Haztech demobilized at completion of test pit digging. ~~On 20~~

On 20 May 1987 a site Investigation was conducted by OSC & ERCS contractor, to find exposed trash and discuss options/procedure ~~of Covering~~ for burying.

Estimated ERCS Cost To Date: 9000

POLREP

TO: Tim Fields, ERD Headquarters
George Moein, Chief, ERD, Region IV

DATE: June 3, 1987

POLREP: Lee's Lane Landfill, Lou.Ky, Polrep #3

OSC: Dora Ann Danner

SITUATION:
Weather hot, cloudy with scattered showers

Personnel On Scene:
ERCS: 3
TAT: 2
EPA: 1 on June 2

ACTIONS TAKEN:
On June 1, 1987, Haztech sent two representatives to set up site facilities and make arrangements for mobilizing equipment.

On June 2, 1987, Haztech personnel continued to set up site facilities. CMC subcontractors mobilized bulldozer and trackhoe. Central tract began to be cleared by bulldozer.

FUTURE PLANS:
Trees will be cut and brush cleared for next couple of days. More equipment (chipper, skidder, etc) wil be mobilized. Facilities will continue to be set up.

COST TO DATE:
~~ERCS~~ - $9,000.00
~~TAT~~ - $4,000.00
~~EPA~~ - $1,300.00

TOTAL $14,300.00

POLREP

TO: Tim Fields, ERD Headquarters
George Mosin, Chief, ERD, Region IV

Date: June 9, 1987

Polrep: Lee's Lane Landfill, Louisville, KY, Polrep #6

OSC: Ed Hatcher

Situation: weather hot, clear

Personnel on site:
ERCS: 12
TAT: 1
EPA: 1 on June 8

Actions take: On June 7 and June 8, 1987, ERCS contract continued to clear river bank and cut trees in center tract. An air compressor was mobilized to the site on June 7. [redacted]

Future Plans: The trees and brush near the riverbank in the center tract will continue to be cleared. Phone service and electricity will be connected.

COST TO DATE:

ERCS	$42,000
TAT	$ 8500
EPA	4000
	54,500

SOLREP

[redacted]

To: Jim Fields, ERD Headquarters
George Mosin, Chief, ERD, Region IV

Date: June 12, 1987

Subject: Lee's Lane Landfill, Louisville, KY Subject

OSC: Ed Hatcher

Situation: weather - hot, scattered showers

Personnel on site:

ERCS: 12

TAT: 1

EPA: 1

Actions today: On June 9 and June 10, 1987 ERCS contractors continued to cut trees and clear brush on site. Another trackhoe and bulldozer were mobilized to the site on June 10. Phone service was connected on June 10.

Future plans: ~~Tree~~ tree cutting will [redacted] continue in center tract. Electricity will be connected. The galley and dozen trailers from the A.L. Taylor site in Shepardsville, KY will be brought to Lee's Lane.

POLREP

To: Tim Fields, ERD Headquarters
George Moein, Chief, ERD, Region IV
Date: June 12, 1987
Polrep: Lee's Lane Landfill, Louisville KY
OSC: Ed Hatcher Polrep #8
Situation: weather - hot and clear on June 11
raing on June 12
Personnel on site: ERCS - 12
TAT - 1
EPA - 1 on June 11

Actions taken:

On June 11, trees continued to be cut on site. On June 12, rain prevented [redacted] any normal work activities from being done. On June 12, the galley trailer and decon trailer from A.L. Taylor site were brought to Lee's Lane and set up. The electricity was connected on June 12 also.

Future plans: Normal tree cutting operations will start back up on June 13.

COSTS:

ERCS -
TAT -
EPA -
TOTAL

DDD RECV CONNECTED 19-Jun-86 06:13 13

EASYLINK 114371SA001 19JUN87 15:23/15:25 EST
VIA: 8107518145

TO: 62895183

EPAATL

WU INFOMASTER 4-032527S170-002 06/19/87
ICS IPMBNGZ CSP
502447224Z DGM TDBN LOUISVILLE KY 92 06-19 0325P EST
TWX 8107518145 EPA ATL
1327 EPA

TO: TIM FIELDS HEADQUARTERS GEORGE MOEIN REGION 4
DATE: 6/19/87
POLREP: 9
NAME OF SITE: LEE'S LANE LANDFILL LOUISVILLE KY
FROM: KEITH SIMS TAT
SITUATION: WEATHER CLOUDY, INTERMITTENT RAIN, 80 DEGREES.
PERSONNEL ON SCENE: ERCS CONTRACTOR: 4
SUBCONTRACTOR: 16 TAT 1
REM III: 1

CONTRACTOR CONTINUES TO CLEAR TREES AND TO GRADE SLOPE IN CENTRAL SECTION. TREES APPROXIMATELY 60 PER CENT CLEARED. SLOPE APPROXIMATELY 40 PER CENT COMPLETE. FUTURE PLANS: ESTIMATE COMPLETION OF TREE CLEARING AND SLOPING JUNE 26TH, 1987. CONTRACTOR WILL BEGIN PLACEMENT OF RIP-RAP ROCK IN WATERLINE AT THAT TIME.

KEITH SIMS

1524 EST
^
EPAATL

MMMM

DISCONNECTED 19-Jun-86 06:14 11 MSG 14

Pg. 138

To: Tim Fields H.Q.
George Mead Regan IV

Date: 6/22/87
Pelcrap # 10
Name of site: Lee's Lane Landfill
Louisville, KY
From: Keith Sims TAT

Situation: weather cloudy 85°
Personell on site:
ERCS Contractor 4
-Subcontractor ~~17~~ 18
TAT: 1
REM III: 2

~~Clearing~~ Tree clearing 75% complete
Grading & sloping 50% complete

Future Plans: ~~Cont~~ Estimate placing of rip-rap rock at waterline June 26, 1987

Cost to date: 6/21/87
ERCS - 202,320 Await bills, 29,513
EFA - 4,346 Total 279,508.
TAT 10,730
15% other costs 25,000

1/7 HQ 29? — 142

To: Jim Fields HQ
George Morin Region II

Date: 6/27/87
Polerep # 11
Site Name: Lee's Lane Landfill, Louis. Ky.
From: Keith Sims TAT

~~Situation:~~ Tree clearing approx. 90% complete. Grading & sloping remains 50-60% complete due to excessive rubbish (tires, concrete, ~~large~~ metal) uncovered as the slope is contoured. ~~The~~ Placing of rip-rap at waterline began today.

Estimate ~~all~~ remaining trees cut by ~~06/~~ 06/28/87, ~~and~~ ~~trash~~ saplings & tree tops to be chipped by 06/30/87.

[illegible] ~~[illegible]~~ Crew will break for holiday 1500 hrs. 07/03/87, return 0700 hrs. 07/06/87.

Costs as of 06/26/87
~~Costs to date~~: E.R.C.S. - 265,278
EPA - 5,374
TAT - 13,133
15% for other costs - 42,569
Awaiting Bills - 46,314
Total - 372,467
Funds remaining - 21.5%

Costs as of 06/30/87

ERCS - $313,294
EPA - $5,374
TAT - $14,431
Awaits Bill - $87,082
15% Misc Cost - $49,964

TOTAL = $470,145

Funds Remaining - 6.0 %

To: Tim Fields HQ
George Moein Region IV

DATE: 07/01/87
POLEREP #12
SITE NAME: LEES LANE LANDFILL, Louisville Ky.
FROM: ED HATCHER OSC REGION IV

SITUATION:

TREE CLEARING 100% Complete. THE AREA OF GRADING AND SLOPING IS 90% COMPLETE ~~OF~~ TOWARDS CLEARING OF TIMBER AND DEBRIS. GRADING AND SLOPING REMAINS 50-60% COMPLETE. RIP-RAP PLACEMENT ON RIVER WATER LINE IS CONTINUING AT A ~~STEADY~~ RATE.

FUTURE PLANS

SLOPING AND GRADING WILL CONTINUE TO A KNOWN ELEVATION OF EL 445. RIP-RAP PLACEMENT TO CONTINUE ALONG RIVER WATER LINE UNTIL 100% COMPLETE.

HOLIDAY

CREW WILL BREAK FOR HOLIDAY AT 1500 HOURS ON 07/02/87 AND RETURN 0700 HOURS ON 07/06/87.

DDD RECV CONNECTED 08-Jul-86 04:32 50

EASYLINK 47764140001 8JUL87 14:37/14:39 EST
VIA: 8107518145

TO: 62995183

EPAATL

WU INFOMASTER 4-024565S189-002 07/08/87
ICS IPMBNGZ CSP
50C44T2242 DGM TDBN LOUISVILLE KT 206 07-08 0234P EST
TWX 8107518145 EPA ATL
1237 EPA

DATE: 8 JULY 1987, SUBJECT: POLREP 14, SITE: LEES LANE LANDFILL, LOUISVILLE KY, FROM: E HATCHER, SITUATION: WEATHER: HOT HUMID HIGH IN THE 90S 50 PERCENT CHANCE OF THUNDERSTORMS

PERSONNEL ON SCENE:
ERCS-18, EPA-2, TAT-1

SEVERE THUNDERSTORMS IN THE AREA ON 5TH AND 6TH OF JULY HAVE CAUSED THE LEVEL OF THE RIVER TO RISE ABOVE THE ROAD AT THE RIVERS EDGE. WORK WAS STOPPED AT 1800 HOURS ON 6 JULY AND STARTED AT 0900 HOURS ON 7 JULY DUE TO THE WEATHER. ELECTRIC POWER WAS OUT AT THE SITE FROM 1745 THROUGH 1900 ON 6 JULY AND 0130 THROUGH 1500 ON 7 JULY.

LAYING RIPRAP ON THE RIVER HAS BEEN SUSPENDED DUE TO THE RIVER LEVEL. RIVER IS CURRENTLY AT 24.3 FEET AND IS EXPECTED TO DROP TO 18 FEET BY 11 JULY. LEVEL ON 1 JULY WAS 10.5 FEET.

GRADING AND SLOPING CONTINUES, ESPECIALLY ON THE SOUTH END OF THE SITE. AN AREA OF FABRIC AND RIPRAP HAS BEEN LAID DOWN TO TEST VARIOUS FABRICS TEAR RESISTANCE.

FUTURE PLANS: CONTINUE LAYING ON RIPRAP ON RIVER'S EDGE WHEN THE RIVER SUBSIDES. COMPLETE GRADING AND SLOPING MAKE FINAL DECISION ON FABRIC AND LAY THE RIPRAP SLOPE.

COSTS TO DATE. ERCS $380,220. EPA $6,390. TAT $16,890. TOTAL $443,500.
E HATCHER, OSC

1413 EST
^
EPAATL

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 15 July 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #15.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 16
TAT - 1
EPA - 1

Situation
Weather; warm, with occasional thunderstorms, temperature in the 80's to 90's F.

ACTIONS TAKEN:
Grading and sloping continues; on the south end of the site, spreading of river sand has begun. Some areas of the slopes must still be graded to satisfy the slope recommedators of 3.5:1. The cover gabric bids have been received and the best supplier chosen. The fabric to be used is Phillips 66 Super 4NP; 15,000 square yards have been ordered and will be delivered on Friday 17 July. The river level has dropped below level of road on the river bank allowing for futher toe installation.

FUTURE PLANS:
Future plans include grading all slopes to less than 3.5:1; lay reprop slopes and place reprop on river bank. Cover and seed the top of the slope and fill area.

COST TO DATE

ERCS	- $	560,000.00
EPA	-	9,000.00
TAT	-	20,000.00
TOTAL	- $	589,000.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 22 July 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #16.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 17
TAT - 1

Situation
Weather; hot and humid; temperature 95 degrees F.

ACTIONS TAKEN:
Laying of filter fabric has begun, extending 100 feet from western end. River sand and manufactured sand being spread on slope extending to 350 feet from western end. Grading continues on eastern end to reduce slope to 3.5:1. Rip-rap extends 500 feet from eastern end along the waterline.

FUTURE PLANS:
Future plans include the continuing placement of rip-rap at waterline; continue laying fabric; begin placement of #3 stone on top of fabric.

COST TO DATE

ERCS	- $	731,259.00
EPA	-	8,500.00
TAT	-	23,362.00
15 %	-	114,468.00
TOTAL	- $	877,589.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 27 July 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #17.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 16
TAT - 1

Situation
Weather; hot and dry.

ACTIONS TAKEN:
Work continues to layer aggrgate on slope. River sand covers 70%, manufacturer sand and filter fabric cover 50%; #3 stone is being spread on fabric. The depth of #3 stone has changed from 3" to 5" to prevent damage to the fabric and rock sliding down slope.

FUTURE PLANS:
Future plans include the continuing of spreading river sand, manufacturer sand and #3 stone on the slope and rip-rap at waterline.

COST TO DATE

ERCS	- $	810,000.00
EPA	-	8,500.00
TAT	-	25,500.00
15 %	-	126,600.00
TOTAL	- $	970,600.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 27 July 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #18.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 13
TAT - 1
EPA - 2

Situation
Weather; overcast 90 degrees F.

ACTIONS TAKEN:
Rip-rap extends 900 feet at waterline; River sand cover is 75% complete; manufacturer sand and fabric cover is 60% complete; #3 stone cover is 25% complete.

FUTURE PLANS:
Future plans include crew to break at 1200 hours on 31 July 1987 to resume operations at 0700 hours 3 August 1987. Continue to place rip-rap at waterline, continue to layor aggregate and fabric on slope.

COST TO DATE

ERCS	- $	880,644.00
EPA	-	850.00
TAT	-	26,515.00
15 %	-	137,349.00
TOTAL	-	$1,053,008.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 05 August 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #19.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 13
TAT - 2
EPA - 1

Situation
Weather; overcast 75 degrees F.

ACTIONS TAKEN:
Rip-rap extends 1500 feet at waterline river sand cover complete on slope except at each end where acess roads to waterline remain. Fabric and manufacturer sand extend 1100 feet across the slope. Number 3 stone cover extends 800 feet across slope.

FUTURE PLANS:
Future plans include complete placement of rip-rap at waterline; continue layoring aggregate and fabric on slope; begin placement of rip-rap on slope.

COST TO DATE

ERCS	- $	922,887.00
EPA	-	8,792.00
TAT	-	27,940.00
15 %	-	143,943.00
TOTAL	-	$1,103,561.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 12 August 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #20.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 13
TAT - 1

Situation
Weather; hot, partly cloudy, temperture 90 degrees F.

ACTIONS TAKEN:
Rip-rap placement on waterline is 100 % complete and sloping of rip-rap on waterline is 20% complete. The layoring of 1) riversand, 2) manufactured sand, 3) fabric filter and 4) #3 stone respectively is 100% complete on slope. The two extreme end sections of the site that once were access roads to waterline are being sloped, graded and covered with sand in preparation for filter fabric placement. Rip-rap placement on top of #3 stone is 100% complete.

FUTURE PLANS:
Future plans include complete sloping of rip-rap at waterline and rip-rap placement on slope on top of #3 stone. Complete layoring process on extreme end sections of site; finish sloping with rip-rap.

COST TO DATE

ERCS	-	$1,139,219.00
EPA	-	9,622.00
TAT	-	30,745.00
15%	-	176,938.00
TOTAL	-	$1,356,524.00

DDD ' RECV CONNECTED, 21-Aug-86 03:06 IT

EASYLINK 35922444A001 21AUG87 15:23/15:25 EST
VIA: 910751814S

TO: 62895183

EPAATL

WU INFOMASTER 4-0320170SCIS-0002 08/21/ET
ICS IPMBNEZ CSP
5023447224S DGM TDBN LOUISVILLE KY 158 08-21 0321P EST
TWX 910751814S EPA ATL
1327 EPA

DATE 21 AUGUST 1987
POLREP 21
LOCATION: LEE'S LANE LANDFILL, LOUISVILLE KENTUCKY
THIS LETTER IS FROM: ED HATCHER, OSC

PERSONNEL ON SITE: ERCS EQUALS 11 TAT EQUALS 1

SITUATION: WEATHER IS HOT CLOUDY TEMPERATURE 92 DEGREES F SLOPING OF RIP-RAP ON WATER LINE IS 100 PERCENT COMPLETE. THE TWO EXTREME END SECTIONS OF SITE (PREVIOUS ACCESS ROADS TO RIVER) HAVE BEEN SLOPED, COVERED WITH FILTER FABRIC, AND COVERED WITH NUMBER 3 ROAD STONE. RIP-RAP PLACEMENT ON SLOPE OVER TOP OF NUMBER 3 ROAD STONE IS APPROXIMATELY 20 PERCENT CMPLETE. REMAINDER OF SITE EXTENDING FROM SLOPE TO ROAD IS BEING LEVELED AND COVERED WITH TOPSOIL.

FUTURE PLANS: REPLACE/REPAIR DRAINAGE DITCH ON WEST END OF SITE WITH NEW 20 INCH DIAMETER PIPE AND LINE CULVERT WITH RIP-RAP. CONTINUE RIP-RAP PLACEMENT ON SLOPE AND TOP SOIL PLACEMENT TO 100 PERCENT COMPLETION.

COST TO DATE:
ERCS EQUALS $1,289,674.00
EPA EQUALS $ 9,422.00
TAT EQUALS $ 22,S13.00
1S PERCENT EQUALS $199,771.00
TOTAL $1,521,S90.00
MARK HUSSING LOUISVILLE TAT REGION 4

1524 EST
^
EPAATL

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 27 August 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #22.

OSC: Ed Hatcher, Region IV

SITUATION:
Weather; warm, sunny, high mid 80's (degrees) F.

Personnel on site:
ERCS - 9
EPA - 1
TAT - 1

ACTIONS TAKEN:
Rip-rap is approximately 40% complete; the top soil approximately 80% complete.

FUTURE PLANS:
Future plans include the drainage ditch on the west end of the site to be repaired today. Work will continue on rip-rap placement on the slope and top soil placement will be completed.

COST TO DATE

ERCS	-	$1,323,610.00
EPA	-	9,800.00
TAT	-	33,075.00
TOTAL	-	$1,366,485.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 3 September 1987

SUBJECT: Lee's Lane Landfill, Louisville KY, Polrep #23

OSC: Ed Hatcher, Region IV

SITUATION:
Weather: warm, sunny, high mid 80 degrees F.

Personnel on site:
ERCS - 6
TAT - 1

ACTIONS TAKEN:
The placement of top soil is 98% completed. There will be some touch-up places around the boundary of the project. The rip-rap placement has been measured and it is 50% complete. The drainage ditch has been repaired and has a shale liner.

FUTURE PLAN
Future plans are to complete the rip-rap and top soil placement.

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 16 September 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #24.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 3
TAT - 1

Situation
Weather; cloudy, temperature 85 degrees F with a 70% chance of thunderstorms.

ACTIONS TAKEN:
Top soil placement at sink hole area is 100% complete and is prepared for grass seeding. Top soil placement on site is 100% complete and is being prepared for seeding. Rip-rap placement on the slope is 75% complete.

FUTURE PLANS:
Future plans include continuing rip-rap placement on slope to 100% completion. Prepare top soil area by discing and grading for grass seeding.

COST TO DATE

ERCS -	$1,543,130.00
EPA -	10,468.00
TAT -	36,016.00
TOTAL -	$1,589,614.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 28 September 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #25.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 3
TAT - 1

Situation
Weather; partly sunny, temperature 85 degrees F with a 20% chance of thunderstorms.

ACTIONS TAKEN:
Rip-rap placement on slope is 100% complete. Extra top soil has been delivered and placed on low areas of the site. Top soil placement is 100% complete in preparation for tomorrow's seeding.

FUTURE PLANS:
Future plans include Horne Engineering surveying the southern parts of the site around Test Pits #9 and #10. Location of pits #9 and #10 did not match the original site maps.

Surveying Monuments to be installed on site for benchmarks for determination of bank movement. Two water and four gas wells are to be installed.

COST TO DATE

ERCS	-	$1,665,775.00
EPA	-	11,396.00
TAT	-	38,328.00
TOTAL	-	$1,715,499.00

POLREP

TO: Tim Fields, Headquarters
George Moein, Region IV

DATE: 27 October 1987

SUBJECT: Lee's Lane Landfill, Louisville, Ky. Polrep #26.

OSC: Ed Hatcher, Region IV

Personnel on site:
ERCS - 0
EPA - 0
TAT - 0

ACTIONS TAKEN:
Site is 100% complete. Completion dates for activities are as follows:

1) **September 25, 1987** - Rip-Rap delivery and placement complete.
2) **October 2, 1987** - Grass seeding of top soil 100% complete; flood wall metal gate installation complete; all equipment de-mobed from site.
3) **October 13, 1987** - Bench mark monuments surveyed and placed on-site.
4) **October 17, 1987** - Installation of (10) gas monitoring wells and (2) water monitoring wells complete. Concrete footing poured around base of water wells and protective covers placed over all of the wells.
5) **October 20, 1987** - Metal (steel) barriers installed around all wells for protection.

COST TO DATE

ERCS -	$1,723,302.00
EPA -	12,488.00
TAT -	41,728.00
TOTAL -	$1,777,518.00